IBM

Office Products

CE Technical Operations Amsterdam

April 18, 1980

TO: All GBG & OP Customer Engineers GBG/I, WT E/ME/A, WT A/FE

SUBJECT: Customer Engineering Memorandums (CEMs) 7/8/9XX Typewriter

The format of the 7/8/9XX CEMs has been changed, and all previous 7/8/9XX CEMs and Index distributed from Amsterdam should be scrapped.

To make them easier to use, and to allow you to find information more quickly, the attached CEMs are arranged in order of Mechanism Code Number.
Within each Mechanism the CEMs are in numerical sequence.

The CEM has a number which includes the mechanism number, for example CEM 02—1

➡ **02**	**1**	**Tilt Pulley Spring Breakage**	April 18, 1980

The CEM type (Safety, Reliability and Service Information) is indicated using the normal CEM type symbols.

	●	**RELIABILITY**		⬢	**SAFETY**		■	**SERVICE INFORMATION**

For speedy location of a Mechanism each page has its Mechanism Number printed in the bottom corner. There is a General CEM section for all miscellaneous CEMs.

Yours sincerely,

MFSherley

M.F. Sherley

IBM GBG - WT E/ME/A - WT A/FE
OP Customer Engineering **MEMORANDUM** **7/8/9X**

This index of CEM subjects is organized by mechanism name and code.
It shows the status of all previous CEM's released on 7/8/9XX. This sheet will be updated when needed to include new and revised CEM's.

(*) Asterisk indicates New Or Revised Items.

Status Codes:
"C" – Current Item, still applicable.
"OB" – Obsolete, information no longer valid.
"X" – Other publication.
"APM" – Adjustment Parts Manual.
"P/C" – Parts Catalog
"S/M" – Service Manual.

April, 1980

CE PUBLICATIONS

Description	Form Number
Adj./Parts Manual (APM)	241-5939-1
"Kadurit" APM	PCE-068-2
Parts Catalog Part No. List	PCE-009-1
7xx/8xx Service Manual	241-5615-2
7xx/8xx Service Manual Suppl., "Thailand"	PCE-080-0
7xx/8xx Service Manual Suppl. "Kadurit"	PCE-066-0
Safety & Service Information	241-5114-0
Sample of Functional Test	PCE-002-0
7/8xx Print Problems Service Hints	PCE-037-0

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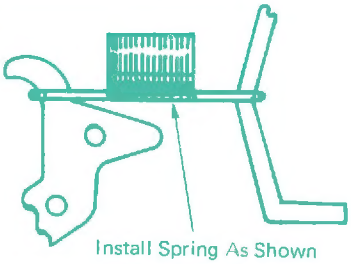
April 18, 1980

01 · BACKSPACE (NON-ROT)

01 1 Latch Spring Installation

April 18, 1980

Backspace—Spacebar Latch Spring: New style backspace-spacebar latch springs (P/N 1174058) must be installed with the body of the spring up to prevent the spring from breaking or slipping off the interposer.



01 2 Pawl Replacement Procedure

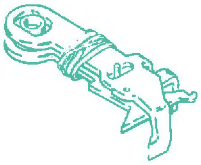
April 18, 1980

Backspace Escapement Pawl Replacement Procedure: Here is a quick well-controlled way of removing and replacing the backspace and escapement pawl.

1. Center the carrier between two feed roll arms to access pawl mounting stud nut. Remove the nut.
2. Push pawl mounting stud down to just clear the escapement bracket.
3. Remove the tab lever spring, and tab trigger spring.
4. Lift out the tab trigger, tab lever and spacer.
5. Remove escapement pawl spring and backspace pawl spring.
6. Move the carrier to the right.
7. The backspace pawl, escapement pawl and spacer will remain on the mounting stud. The mounting stud collar will rest on the escapement torque bar. Just pick them up.

To replace, reverse this procedure.

NOTE: *Installation of the escapement and backspace pawls and spacer will be much easier if the two pawls and spacer are assembled and held with a rubber band. Then the three parts can be installed as a single unit and the rubber band cut away.*

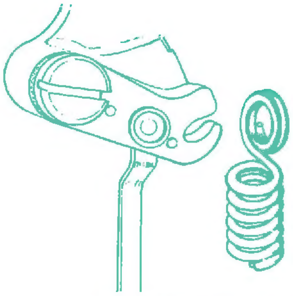


02 - CARRIER & ROCKER

02 1 Tilt Pulley Spring Breakage

April 18, 1980

To overcome breakage install spring in way as shown.



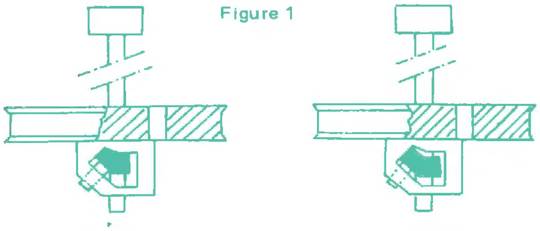
02 2 Rotate Alignment

April 18, 1980

If you have problems to adjust &/or keep rotate alignment, check:

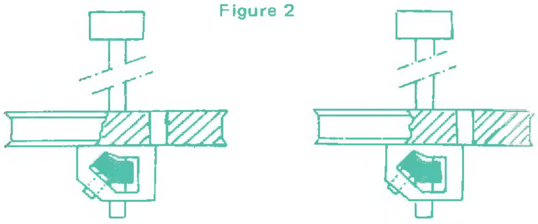
1. That key, rotate pulley (code 702 Ref. 422) is not pressed against pulley before tighten ball socket shaft (look at figure 1). Change key code 702-Ref. 422).

Figure 1



2. If setscrew in rotate pulley is tighten against lower ball socket shaft (look at figure 2). Change rotate pulley code 402 Ref. 420.

Figure 2



3. If pin in lower ball socket is loose (code 702 Ref. 415).
4. Not too much head play caused by wear in slots of ball joint (code 702 Ref. 414) &/or pins in lower ball socket (code 702 Ref. 415) & upper ball socket. (Code 702 Ref. 400). Change parts if needed.
5. No wear in lower ball socket hole in yoke (code 702 Ref. 520).

02 3 Powered Flight & Free Flight Adjustment Tool

April 18, 1980

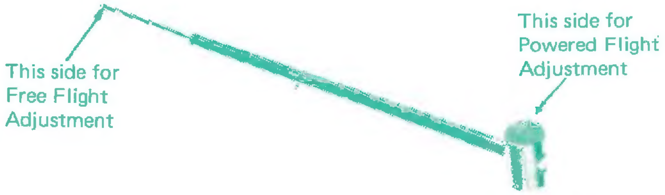
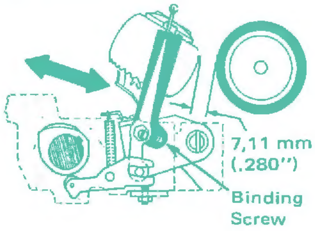

This side for Free Flight Adjustment
This side for Powered Flight Adjustment

Figure 1

ADJUSTMENTS: Copy control lever should be in position A. Repeat each of the following adjustments until correct.

POWERED FLIGHT

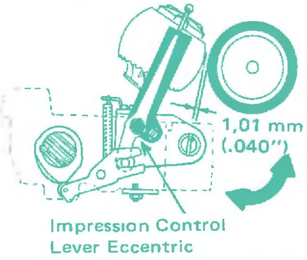
With machine at rest & impression control lever set at position 5, loosen binding screws & move plate front to rear to get 7.11 mm (.280") between homing character & platen.



FREE FLIGHT

With impression control lever at 5 & homing character cycle until print cam follower is on highest point of print cam, adjust eccentric on impression control lever to get 1,01 mm (.040") between homing character & platen.

Stick Position 5



PARTS REQUIRED:

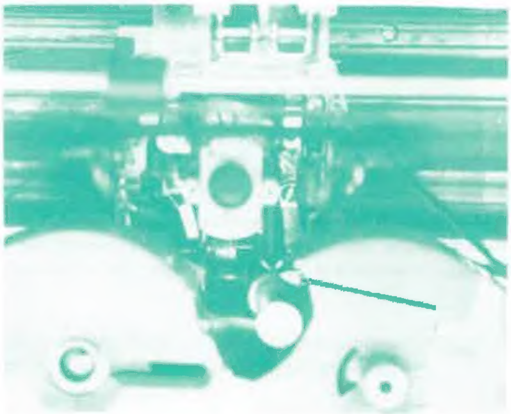
Powered & Free Flight Tool — P/N 8168892.

Note: *This adjustment method will give the same results as when using Hooverometer and Spring Hook as shown in APM 241-5939-1. Frame 217.*

02 4 Intermittent Print Failures / Spiked Driver Gear — Wearing

April 18, 1980

Intermittent print failures & spiked driven gear (715-57) wearing can be caused by interference between spiked driven gear & tilt spring bracket (702-328). Above failures only occur when impression control lever is in position 5 & used ribbon on take up core moves spiked driver in front of tilt spring bracket (look at figure).



If you have this problem loosen mounting screw & move tilt spring bracket to rear. If this is not enough clearance, form tilt spring bracket.

NOTE: *Hold rotate spring retainer (702-426) in position when you loosen tilt spring bracket mounting screw to prevent unload of rotate spring tension.*

Suggested by: Mr. M. de Haan, OP-CE The Netherlands.

02 5 Stencil Application — Way To Get Higher Impression

April 18, 1980

In case that higher impression is needed for stencil application on non-correcting machines, slotted tilt ring, (702-335) can be fitted.

Slotted tilt ring gives about 20 % more *impact.*

For free flight adjustments etc., see CEM No. 02—3.

02 6 Print Quality — Platen Height Adjustment

April 18, 1980

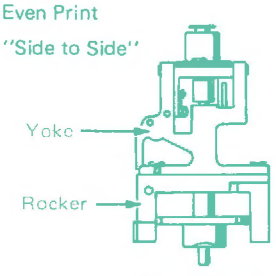
Print quality problems, such as tails on the characters and poor edge definition. The platen cannot be adjusted low enough to get even top and bottom print. Check the platen height adjustment with the platen gauge (APM frame 215).

With the platen gauge installed and the platen adjusted for .030" (0.76 mm) clearance between the top of the platen and platen gauge, the platen should need only slight adjustment to get even top and bottom print. If the platen height eccentrics require excessive adjustment downward for even top and bottom print, the yoke (02-520) could be the problem. The tilt detent slot may be off location.
Since this condition cannot be seen, it is recommended the yoke be changed before attempting further print related adjustments.

Refer to tilt ring and rotate shaft removal procedure in service manual (F/N 241-5615) for service hints.

After replacing yoke, check all print adjustments with emphasis on homing and skirt clearance after adjusting the position of the yoke.

1. Position the yoke rotationally under its mounting screws so the density of the left and right sides of a uniform.



(Front View)

02 7 Rotate Spring Adjustment — Machines Equipped With Shift Sensing

April 18, 1980

When readjusting or replacing rotate spring (702-424) disconnect shift sensing spring (741-20) to ensure correct measurement is obtained. The shift sensing spring applies an additional 113 grams (1/4 LB) tension on spring which can cause wear or breakage.

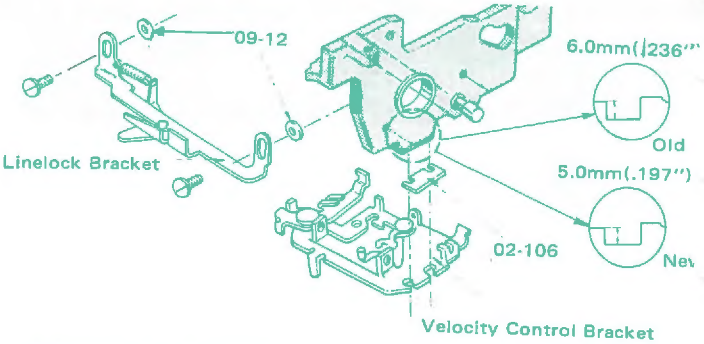
02 8 Spacers — For Use On 7/8/9XX Carriers

April 18, 1980

PURPOSE: Material was removed from two sections of the carrier. Due to this change, spacers are required for the loss of material on these carriers.

1. On 7/8/9XX machines between S/N 1166659 and 1204000 a spacer (02-106) is installed between the carrier and the velocity control bracket. (Look at figure).

2. On all 7/8/9XX single pitch machines above S/N 1166659 two spacers (09-12) are installed between the carrier and linelock bracket. (Look at figure).



Adjustments: Not changed.

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY
02	106	8170269	Spacer, Velocity Control Brkt.	1
09	12	1107986	Spacer, Linelock Brkt.	2

Note: *P/N for carrier assemblies (02-130) not changed.*

02 9 Carrier Buffer — Selective Ribbon Machines

April 18, 1980

A carrier buffer is now available for field use. It can be used when excessive play is found between the print sleeve and print shaft. When experiencing this problem, all the applicable adjustments must be checked and defective parts changed, before installing buffer. Install buffer on R/H side of carrier (see figure).

Note: *Excessive carrier play can cause incomplete correction lift off, escapement failures, bad character alignment, poor print quality, overbank failures, etc.*

ADJUSTMENTS: Adjust buffer to clear escapement rail by 0,03 mm (.001") at closest point. Top lug must contact carrier (look at figure).

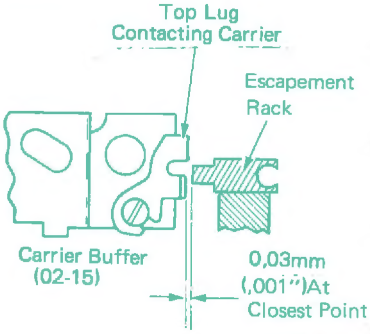


Figure 1

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION
02	15	1204943	Carrier Buffer
	16	1164580	Screw, Buffer Mounting

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Estimated Installation Time: .2 Hrs.

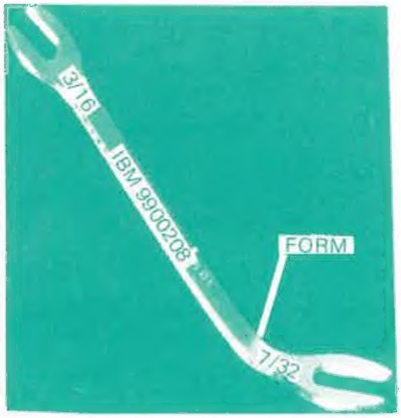
ORDER: Via COP Only.

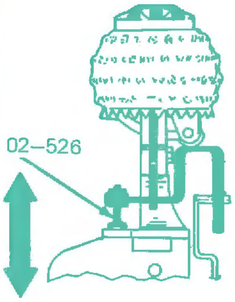
02 10 Skirt Clearance — Lower Lock Nut — Easy Way To Loosen

April 18, 1980

The thin wrench (7/32 x 3/16) P/N 9900208 may be formed to make easy access to the lower lock nut (02-526). Lock nut can be loosened as shown in figure.

Carrier & Rocker CEM No. 02-10 (Cont'd)





02 11 Typehead — Broken Teeth

April 18, 1980

SYMPTOM: Broken teeth in the area of +5L.C and —5U.C position can be caused by not fully detenting the typehead lever (02-182) before the typehead is lifted off the tilt ring.

SOLUTION: Typehead lever has to be complete detented in open position before head is lifted off upper ball socket, if not it is possible that lever spring rotates head against upper ball socket causing broken teeth.

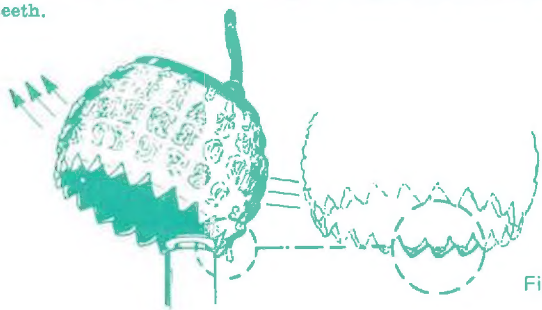


Figure 1

Note: *Examination of unbroken typehead will generally reveal marks on the teeth below the typehead lever pivot if typehead is being removed before the lever is detented (see Figure).*

02 12 Underscore Problems — Service Hints

April 18, 1980

SOLUTION: The following points should be checked, and if necessary adjusted, according to APM. Form No. 241-5939-1.

CAUTION: *Be sure typehead is good and machine is lubricated according to specifications.*

1. Carrier. All adjustments.
   Pay special attention to:
   a. Clearance between print sleeve and shaft (CEM 02-9).
   b. Rotate and tilt detent.
   c. Rotate spring tension.
   d. Print adjustments.

2. Cycle clutch and gear train.

3. Drive belt tension.

4. Escapement timing.

5. Selection. All adjustments.
   Pay special attention to:
   a. Print shaft timing.
   b. Rotate link twisted (binding) old style only.
   c. Wear of L.H. tilt pulley (123-26).
   d. Typehead lubrication inside.

6. Platen height.

Note: *In 12 pitch mode the underscore will often appear uneven due to overlapping, because the length of the underscore is the same on 10 pitch and 12 pitch typeheads.*

02 13 Alignment Failures And Print Problems

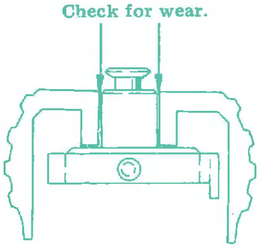
April 18, 1980

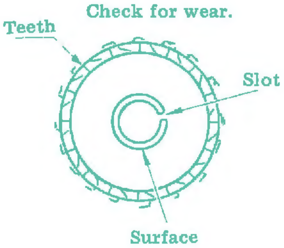
PURPOSE: To inform CE about possible causes of print problems and bad tilt and rotate alignment and how to solve the problem.

SOLUTION: Check and/or adjust the following.

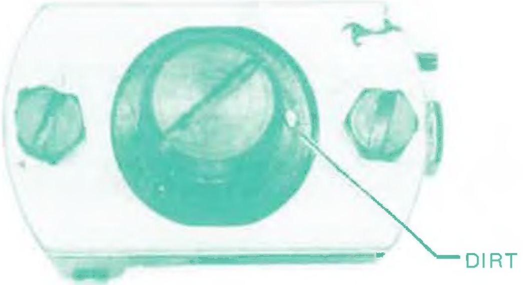
Note: *All adjustments refer to APM F/N 241-5939-1.*

1. The Typehead:
   Outside chrome surface and all detent teeth—complete.
   Locking springs fully engaged in slot in upper ball socket. No wear inside the typehead socket where it fits around the upper ball socket. Too much clearance will create alignment failure.
   No worn or broken parts of inside socket where typehead rests on the flange of the upper ball socket. Pay special attention to the location pin slot.



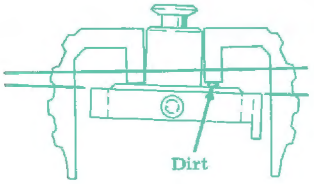


2. The Upper Ball Socket:
   The upper ball socket must be clean and well lubricated. Pay special attention to the surface of the upper ball socket flange on which the typehead rests.

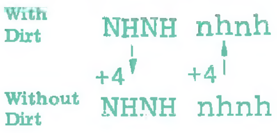


This is a typical example of a good tilt ring with dirt on the upper ball socket flange, causing bad alignment.

WARNING! DO NOT MAKE PRINT QUALITY SAMPLES BEFORE YOU HAVE CLEANED THE TYPEHEAD INSIDE, AND THE UPPER BALL SOCKET FLANGE WHERE TYPEHEAD RESTS.



This shows what happens on the tilt ring.

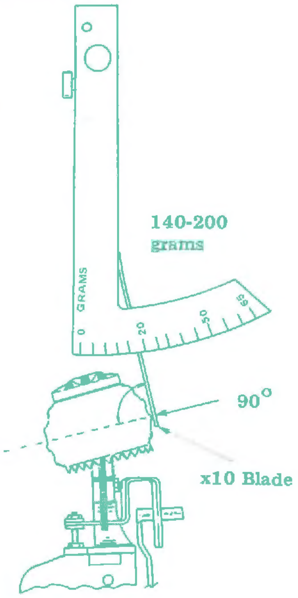


This shows what happens on the paper.

3. **Bias spring Tension (Slotted Tilt Ring Only):**
Measure the bias spring tension with the typehead installed by pushing it towards the rear with the gram gauge blade marked "x10". The gauge should read 140-200 when the typehead starts moving.

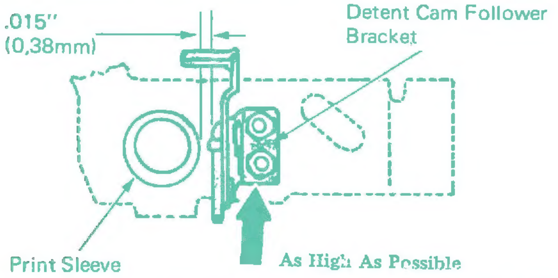
Change the bias spring if tension is wrong.
P/N: 8168016.

Note: *The tilt ring must be clean and lubricated and the upper ball socket centered (Frame No. 46) before making this check.*



4. **Pivot Pins:** NO PLAY, No Bind (Frame No. 49).
Rotate Detent: NO BIND, MINIMUM PLAY (Frame No. 47).
Tilt Detent : NO BIND, MINIMUM PLAY (Frame No. 48).

5. **Detent Cam Follower Bracket:**
Adjust the bracket as high as possible. The front to rear adjustment remains the same (Frame No. 50).

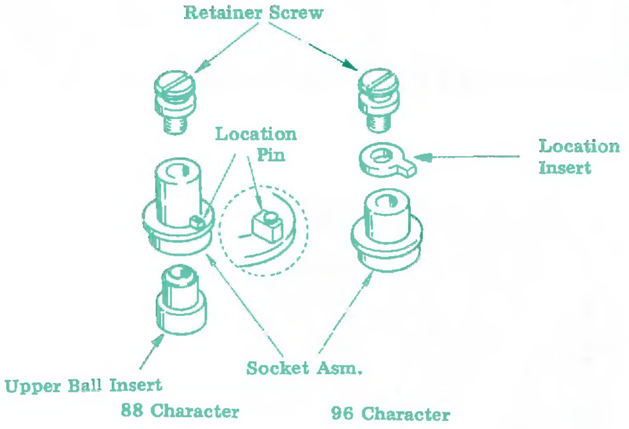


The front-to-rear motion of the follower should be no more than the thickness of the detent actuating lever. Excessive play in the stud will change the detent timing and cause smearing.

Note: *If you change this adjustment, always check skirt clearance (Frame No. 52) and print shaft timing (Frame No. 80).*

6. **Tilt Homing:** Check Adjustment (Frame No. 61).
Rotate Homing: Check adjustment (Frame No. 83).

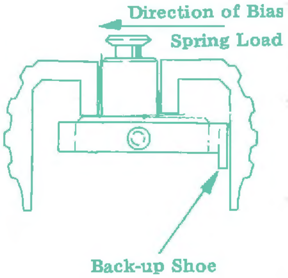
Note: *For adjustable upper ball socket — Do not overtighten the retainer screw. The torque supplied from a medium screwdriver and using the fingertips only is sufficient. The retainer screw and the location insert for 96 character and the upper ball socket insert for 88 character are designed to lock safely when tightened with a low torque.*



Note: *The location insert for 96 character has a rough and a smooth surface. The rough surface should be installed facing DOWN.*

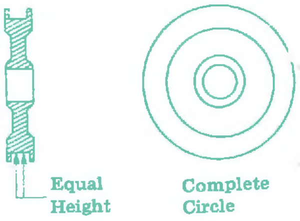
7. **Typehead Inner Surface (Slotted Tilt Ring):**
On a machine with slotted tilt ring, the back up shoe is in contact with the inner surface of the typehead all the time due to the load from the bias spring. For that reason, the inner surface of the typehead must be clean, smooth and lubricated with a thin layer of IBM Grease No. 23.

Note: *A slotted tilt ring may feel binding when you try to turn the upper ball socket. YOU CAN NOT JUDGE THE TILT RING CONDITION FROM THAT. Install a typehead (check inner surface) to bring the upper ball socket into operating position. Disengage rotate detent and try now to turn typehead and upper ball socket in the same way as it happens in the machine.*



8. **Rotate spring tension:**
Due to the above mentioned, the rotate spring tension must be correctly adjusted.
Note: *For machine with slotted tiltrings, the rotate spring tension should always be checked with the typehead ON and the rotate detent spring disconnected.*
Half cycle a negative five lower case character as usual (Frame No. 62).

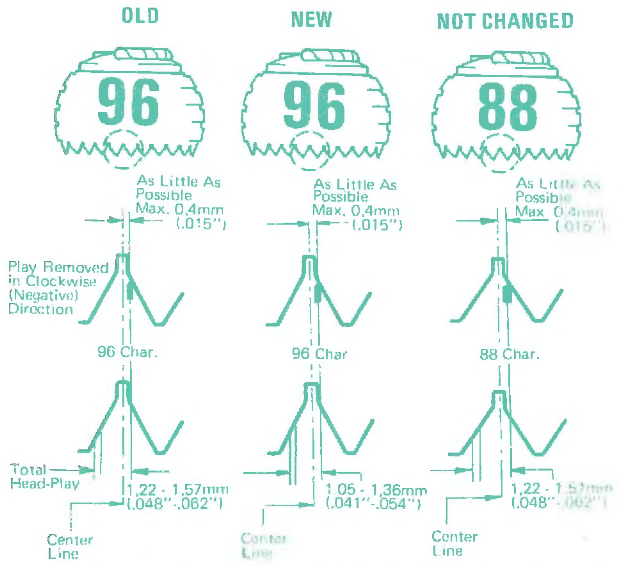
9. **Tilt and Rotate Tape Pulleys:**
Inspect pulleys on the guiding surface for equal height on both sides and on the outer circumference for a complete circle shape (see figures).
Wrong pulleys may create alignment failure and broken tapes.



10. **Head Play:**
The head play should be 1.22 mm — 1.57 mm for 8XX and 1.05 mm — 1.36 mm for 9XX with the correct ball joints installed. The distance between teeth on a 88 character typehead is approximately 3.8 mm and on a 96 character typehead 3.4 mm. If discovering too much or too little head play, inspect pins in upper and lower ball socket and ball joint. Replace wrong parts.

P/N 8169890 upper ball socket insert 8XX.
P/N 8169107 upper ball socket 9XX.
P/N 1124220 Ball joint 8XX.
P/N 1449893 Ball joint 9XX.
P/N 1164550 Lower ball socket.

Carrier & Rocker CEM No. 02-13 (Cont'd)


OLD
NEW
NOT CHANGED
96
96
88
As Little As Possible Max. 0,4mm (.015")
As Little As Possible Max. 0,4mm (.015")
As Little As Possible Max. 0,4mm (.015")
Play Removed in Clockwise (Negative) Direction
96 Char.
96 Char.
88 Char.
Total Head-Play
1,22 - 1,57mm (.048"-.062")
1,05 - 1,36mm (.041"-.054")
1,22 - 1,57mm (.048"-.062")
Center Line
Center Line
Center Line

Detent Pos. And Play Viewed From The Rear Of Machine

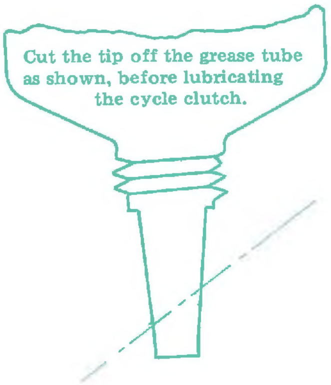
(Figure 1)

Note: *It is not recommended to use the 9XX ball-joint on 8XX machines.*
The new 9XX ball-joint is built into Amsterdam Prod. since approx. S/N 159.00.00.

11. Differential Bracket Studs:
    Check if studs are loose or broken. If upper right hand stud is broken on old style bracket install new bracket or contact T.S.G. Manager to get latest developed field fix solution.

12. Positive Selector Bail:
    Check if latch plate is not loose.

13. Cycle Clutch:
    Lubricate the cycle clutch using IBM No. 23 Grease and type several lines of different characters. Inspect the grease that came out between the cycle clutch sleeve and the cycle clutch pulley. If the grease is rusty you can assume that the cycle clutch spring is worn and it should be replaced. If no grease came out repeat operation until it does. If it is impossible to press grease through the cycle clutch you can assume that the grease holes in the cycle shaft are blocked. They should be cleaned and the cycle clutch spring replaced.



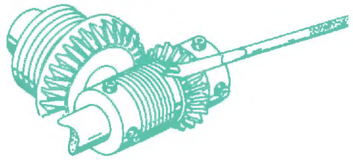
Cut the tip off the grease tube as shown, before lubricating the cycle clutch.

14. Check drive belt tension according to Frame No. 8, and gear train according to Frame No. 2.

02 14 Moving Carrier With Machine Half Cycled.

April 18, 1980

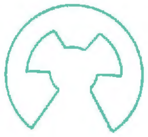
The carrier can be moved with the machine half-cycled without changing the half-cycle position. To do this, push the tip of the RH loop of the tab governer spring toward the rear after latching out the tab lever. This will allow the carrier to move to the right.



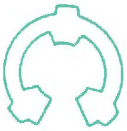
02 15 C-clip For New Print Shaft With "Full Length Key Way"

April 18, 1980

PURPOSE: To prevent C-clip from coming loose when using new print shaft.
The washer P/N 1078497 has been used as a temporary solution with old clip.



NEW



OLD

PARTS REQUIRED:

MECH/REF.	PART NO.	DESCRIPTION
702 051	8170230	C-clip for print shaft Full Length Key Way

THE FOLLOWING INFORMATION FOR IBM USE ONLY

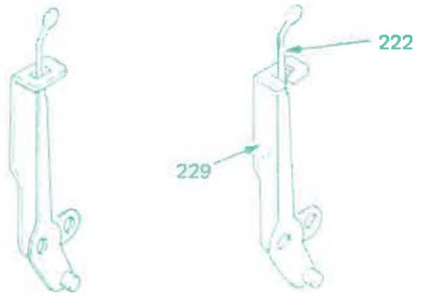
PARTS INFORMATION:

ORDER: Via COP Only.

02 16 Velocity Lever Asm.

April 18, 1980

For improved plant assembly, an opening has been added to the upper portion of the velocity lever bracket on 8/9XX.



Old Level

New Level

Figure 1

MECH/REF.		PART NO.	DESCRIPTION	QTY	STOCK ECHELON
02	222	1206588	Velocity Lever 8/9XX	1	D
	229	1141758	Velocity Lever Bracket	1	D

THE FOLLOWING INFORMATION FOR IBM USE ONLY

PARTS INFORMATION:

ORDER: Via COP Orly.

Old level assemblies will not be available when current stock is completely used. When replacing old level assemblies it is necessary to order both individual parts. B/Ms will be available at a later date. Individual parts for 7XX will be announced later.

02 17 Tilt Pulley Spring — Mixed Stock

April 18, 1980

SYMPTOM: Spring Break.

SOLUTION: Problems with breaking tilt pulley springs may be caused by mixed field and plant stocks. Wrong level springs are shorter than good level springs.
Spring level can be identified by the number of coils.
Replace the broken spring only by a new long spring (Fig. 1).
Good springs have 29 coils and are longer (fig. 1).
Bad springs have 25 coils and are shorter (fig. 2).

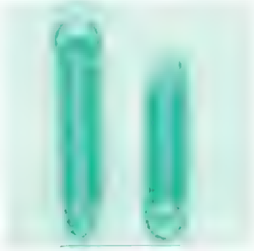


Fig. 1 Fig. 2

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION
02	326	1128459	Tilt Pulley Spring

Note: *See CEM No. 02–1 for installation of new spring.*

MACHINES AFFECTED:
Netherland Prod.: Below S/N 1.87X.XXX

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Use Applicable Service Code.

PARTS INFORMATION: Scrap all short springs.

ORDER: Via COP Orly.

02 18 Carrier Replacement — Service Tip

April 18, 1980

Carrier replacement can be reduced on 8/9XX machines by leaving the transport cords and velocity cable attached to the original velocity bracket. If the velocity bracket (24-41 or 26-55) does not require replacement, it may be removed from the old carrier and installed on the new one without disconnecting transport cords or velocity cable.

1. Remove two screws (24-49 or 26-115) securing velocity bracket (24-41 or 26-55) to carrier, leaving cords and velocity cable attached.
2. Remove rocker spring (02-529).
3. Remove carrier.
4. Remove velocity bracket from new carrier.
5. Install carrier.
6. Reinstall original velocity bracket. Ensure that the D1 follower yoke (02-210) is properly positioned over the print cam follower roller (02-2-5).
7. Reinstall rocker spring (02-529).

Note: *Yoke mounting stud (02-220) is free to move left-right. Use of scissors clamps or other means is advisable to prevent stud from moving during carrier change and reinstallation.*

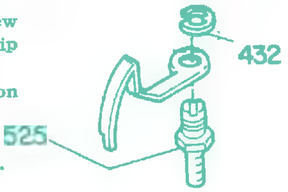
THE FOLLOWING INFORMATION FOR IBM USE ONLY.

Use Applicable Service Code.

02 19 Detent Actuating Asm. Mounting Screw — Redesigned (702—525)

April 18, 1980

PURPOSE: The shouldered nut (02-522) has been replaced by a "C" clip (02-432).
When replacing the mounting screw (02-525) also order "C" clip (02-432).
The new level screw can be built on all level carriers.



ADJUSTMENTS: Remain the same.

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY	Stock Echelon
02	432	1092125	"C" Clip	1	D
	525	1256453	Screw Mounting	1	

THE FOLLOWING INFORMATION FOR IBM USE ONLY

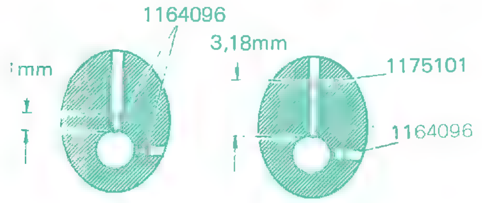
ORDER: Via COP Orly.

02 20 Ribbon Feed/Detent Cam — Screw Changed

April 18, 1980

PURPOSE: To avoid loose cams (02-505), the screw (02-504) mounted in the long screw hole has been changed. A longer screw is now available and should be used.

OLD Level	NEW Level
Two screws are the same.	Long screw in the longer hole.



PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY	STOCK ECHELON
02	504	1164096	Short Screw	1	D
	504	1175101	Long Screw	1	D
14	142	1164096	Short Screw	1	D
	142	1175101	Long Screw	1	D
15	13	1164096	Short Screw	1	D
	17	1175101	Long Screw	1	D

THE FOLLOWING INFORMATION FOR IBM USE ONLY

PARTS INFORMATION: Available in W.T. Parts packet No. 6518031.

03 - CARRIER RETURN

03 1 Carrier Return Failures

April 18, 1980

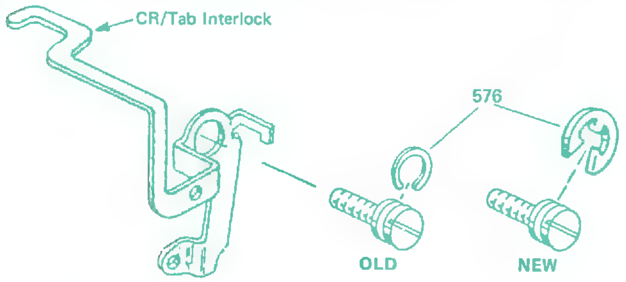
When carrier return failures occur, caused by too much shoe clearance, check if clip (703-507) is fully engaged on actuating arm (703-508) before readjusting.

03 2 Carrier Return/Tab — Interlock Failures — 7/8/9XX

April 18, 1980

Intermittent failures caused by a loss in motion when a tab operation interupts a carrier return operation and does not unlatch the carrier return clutch latch (703-611), can be solved with the new level C-clip.

Note: *Install C-clip with open end facing down (Look at Figure).*



PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION
703	576	257982	Clip

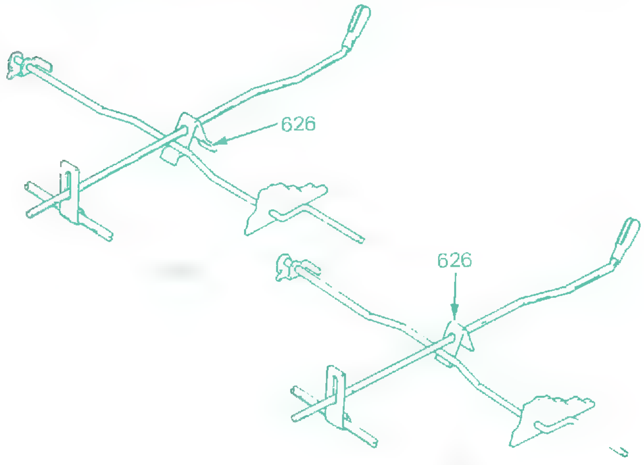
03 3 Carrier Return Interlock Clip — Redesigned

April 18, 1980

The C/R interlock clip (03-626) has been redesigned to eliminate possibility of rotating on the interlock link.

SYMPTOM: Keyboard locks while typing due to the clip rotating on the interlock link.

SOLUTION: Install redesigned part. The part number and adjustments remain the same.



03 4 Carrier Return Latch — Redesigned

April 18, 1980

PURPOSE: Two additional holes have been added to the carrier return latch (03-207). One is an additional hole for the carrier return unlatching link (03-202) and the other is a hole to anchor the latch spring (03-205) (Figure 1).

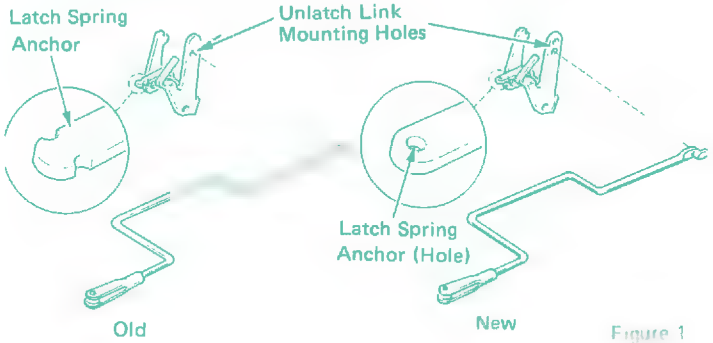


Figure 1

SYMPTOMS:

1. Unlatching carrier return problems.
2. Spring 703 - ref. 205 could slide up the lug.

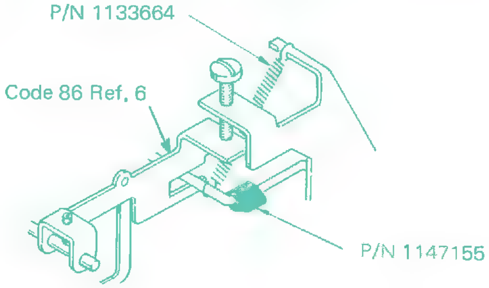
SOLUTION: Replace the latch (03-207) and reconnect the unlatching link (03-202) in the lower hole and attach the latch spring to the hole in the anchor lug.

03 5 Carrier Return Operational Lever — Additional Spring

April 18, 1980

KADURIT ONLY

PURPOSE: A spring and a clip have been added to improve the restoring of the Carrier Return Operational Lever (see figure).



PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY.
21	202	1133664	Spring	1
03	632	1147155	Clip	1

MACHINES AFFECTED:
All Kadurit Machines

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Service Code: 30/31

PARTS INFORMATION:

ORDER: Via COP Only

07 - ESCAPEMENT/HALF BACKSPACE (ROTARY B/S)

07 1 Escapement Pawl Wear — Diagnosis

April 18, 1980

The following list should aid in diagnosing escapement pawl wear:

1. One of the first signs of wear is tab failures (extra space or spaces) on short tabs of approximately 25,4 mm (one inch).
2. Excessively load the carrier to the right by hand and operate the repeat spacebar. If there is enough wear, the carrier will skip spaces.
3. With the carrier resting on the escapement pawl, move the carrier slightly to the left by hand, and observe the motion of the escapement pawl on the spring lug. If wear is present, the pawl will move slightly toward the front of the machine as it fully bottoms in the escapement rack. A worn pawl will not be fully bottomed when holding the carrier under mainspring tension.
4. A final check for wear is to feel the working surface of the pawl with a springhook. If the pawl is excessively worn, a slight notch can be felt.
   It is possible that enough wear may be present to cause failures but no notch can be felt. This procedure is only useful when excessive wear is present.

Although the above-listed aids will simplify diagnosing worn pawls, do not overlook the possibility of other maladjustments as the cause of the problem, i.e. tab rack adjustment, pawl clearance, etc.

07 2 Escapement Pawl Spring — Replacement

April 18, 1980

When replacing the escapement pawl spring, it may take less time if the tab lever and tab trigger are removed. This will allow access to hook up the spring.

07 3 Escapement Trigger Height — Varies

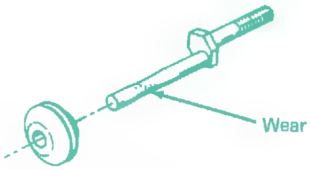
April 18, 1980

On some machines, the escapement trigger height will differ on the two lobes of the escapement cam, resulting in piling or skipping. This is caused by a bent filter shaft or an eccentric escapement cam. In some cases, rotating the escapement cam 180 degrees will adjust this eccentric condition and allow proper adjustment of the trigger height.
If this is unsuccesful, replace the filter shaft and escapement cam.

07 4 Escapement Failures — Older Machines

April 18, 1980

Some escapement failures have been caused by wear on the transport cord idler pulley stud.
When worn, the pulley fails to track properly and causes a slight bind.
See drawing.



07 5 Escapement — New Adjustment Procedure

April 18, 1980

PURPOSE: Give more information as APM to ensure that escapement rail and escapement torque bar are parallel.

SOLUTION:

APM FRAME 86

Escapement Rack (NRB/S and RB/S) — With the print shaft rotated so the key way is down, adjust the left end of the escapement rail for 0,76mm (.030") between the platen gauge and the escapement rail.

a. Loosen first three rail mounting screws from left end and adjust the left end with the platen gauge (Fig. 1).
   After adjusting the left end tighten the first rail mounting screw. It is important that this screw is tight to prevent loss of left-to-right position of the rail when adjusting the right end.

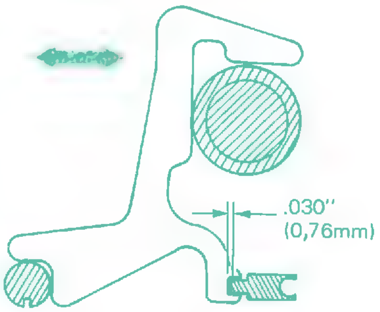
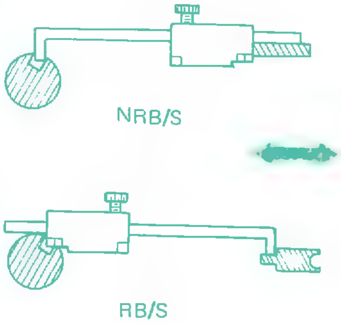


Figure 1

Right Side View

CAUTION: *Since the left end of the escapement rack is held stationary by the escapement rack bearing plate (07-20), adjusting the rail may cause a bow in the escapement rack or a bind in the sector gear and rack gear. If this occurs, loosen the two escapement rack bearing plate screws, relieve the bind and adjust the switch pitch sector gear.*
(Above paragraph is included in Frame APM 87).

b. Loosen the remaining screws on the right end. With the print shaft in the rest position, back the cycle shaft against the check pawl. Set the Hooverometer to just span the distance from the print shaft to the escapement rail on the left end (Fig.2). Using the Hooverometer (Fig. 2), adjust the center and tighten center screw. At this point, it may be necessary to flex the rail to match the left and center. Adjust the rail using the Hooverometer and tighten screws. This procedure will ensure the escapement rail is not bowed and is parallel to the print shaft.



Right Side View Figure 2

APM FRAME 88

Escapement Rack Gear (RB/S) With the escapement rack gear stop lug against the half backspace lever mounting stud, adjust the 10 pitch escapement rack teeth vertical. This can be done as follows: Loosen the escapement rack gear. Insert the blade of a small three inch screwdriver in the first tooth on the left end of the rack. Raise the screwdriver until it touches the tab rack shaft and tap the screwdriver until it is fully seated in the tooth and the rack stops rotating: then tighten the rack gear (Fig. 3). This procedure will ensure the rack teeth are vertical.

Note: *The tip of the screwdriver blade must be square.*

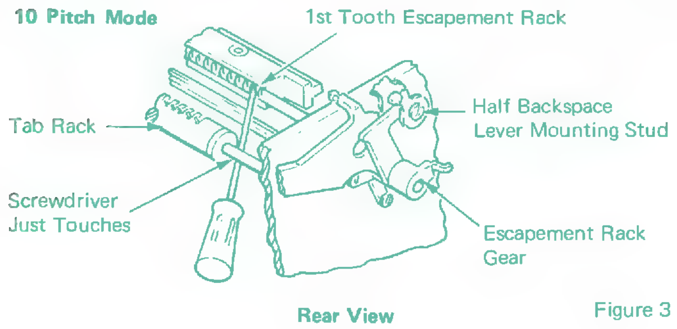


Figure 3

APM FRAME 89

Escapement Rack Gear Lower Stop (RB/S) Form the lower stop toward the front of the machine and insert the small three inch screwdriver in the first tooth of the escapement rack and tap the screwdriver until it is fully seated and the rack stops rotating. Form the lower stop until it touches the escapement rack gear stop lug. (Fig. 4).

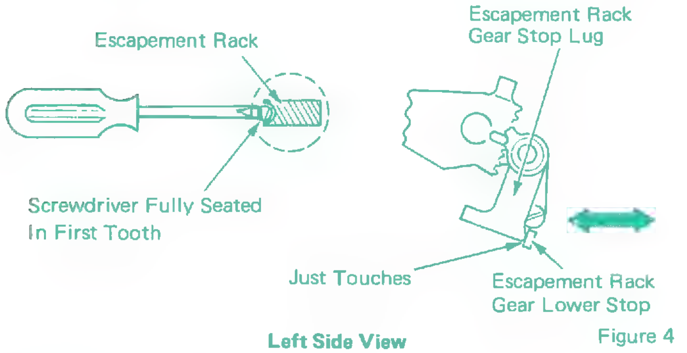

Escapement Rack
Escapement Rack Gear Stop Lug
Screwdriver Fully Seated In First Tooth
Just Touches
Escapement Rack Gear Lower Stop
Left Side View

Figure 4

APM FRAME 90

Switch pitch sector gear (RB/S)

APM FRAME 91

Escapement pawl guide lug (RB/S), see CEM No. 318.

APM FRAME 93

Carrier Shoe (RB/S). This adjustment may be observed by applying grease on the escapement rail approx. 50,8 mm (2 inches) from the right end. Type or spacebar to track the escapement pawl through the grease. Carrier return and sight down the rack from the right end and observe the track left by the escapement pawl in the grease. The track should be centered in the rack.

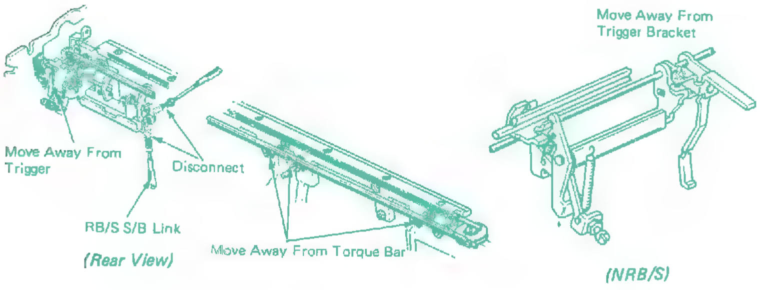
Note: *The front carrier support adjustment must be checked before making this adjustment.*

APM FRAME 95

Escapement bracket.

APM FRAME 96

Move the torque bar stop (06-39) and backup screws away from the torque bar. Move the trigger uptstop out of the way and disconnect the spacebar link (17-307 RB/S only). Disconnect the escapement link.



APM FRAME 97

Escapement torque bar end play.

APM FRAME 99

Note: *Up to Frame 100 the following adjustments are preliminary.* With the carrier at the left, turn the torque bar stop screw (06-55) in so that the torque bar just touches the pawl tail (Fig. 5).

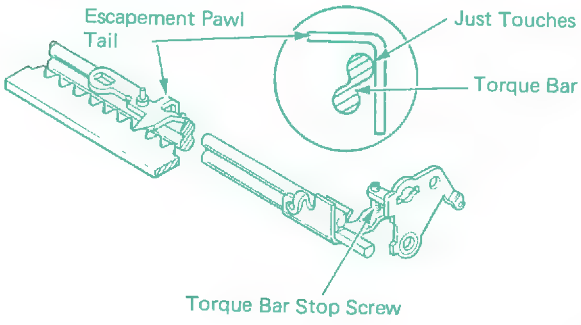


Figure 5

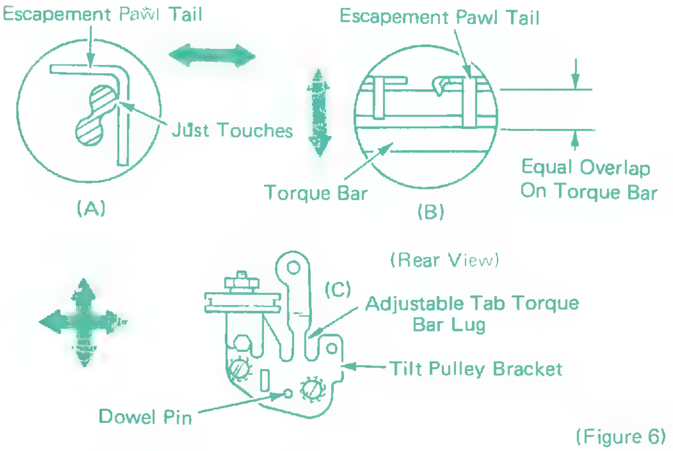
APM FRAME 100

With the carrier at the right, adjust the tilt pulley bracket (23-50) so that the torque bar touches the pawl tail (Fig. 6). Adjust as follows:

A) If the tilt pulley bracket does not have the dowel pin (23-54), adjust the bracket front-to-rear so the torque bar touches the escapement pawl tail (Fig. 6A). Adjust the bracket top-to-bottom so that the pawl tail overlaps the escapement torque bar on the right side the same as the left side (Fig. 6B).

B) If the tilt pulley bracket with the tab torque bar adjustable (see arrow C - Fig. 6) is pinned, it is possible to drive the pin in and adjust as in step 10 A.

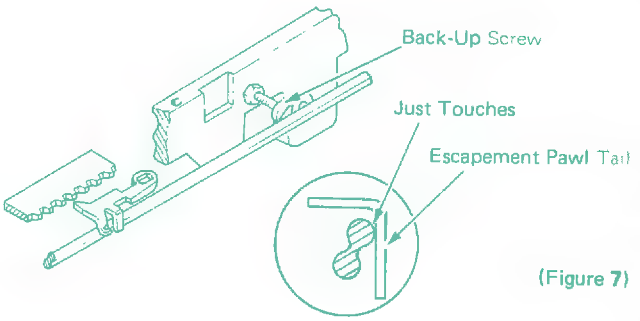
C) If this lug is not adjustable, don't drive the pin out.



(Figure 6)

APM FRAME 101

Move the carrier to the center and adjust the center backup screw so that the escapement torque bar touches the escapement pawl tail (Fig. 7).

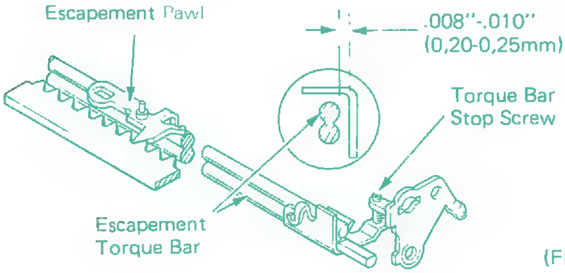


(Figure 7)

Escapement/Half Backspace CEM No. 07-5 (Cont'd)

APM FRAME 102
Left torque bar back up screw.
Adjust as 101.

APM FRAME 103
Move the carrier to the left, center and right. Ensure the escapement torque bar is just touching the escapement pawl tail the entire length of the rail. When this condition is met, back the torque bar stop screw out one full turn (Fig. 8). This will obtain 0,20-0,25 mm (.008"-.010") clearance between the torque bar and the pawl tail.

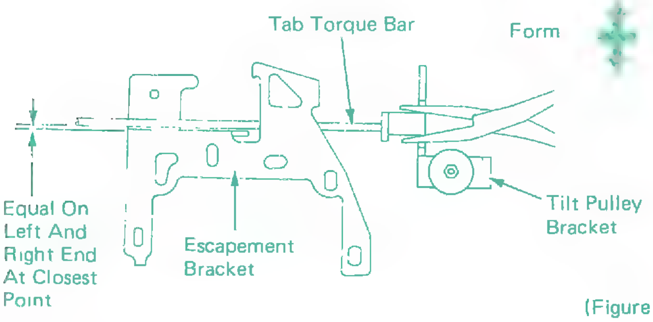


(Figure 8)

Note:
A) This is the way to adjust escapement mechanism.
B) The way to check the above sequence is as follows: the back up screws (left and center) must be against the escapement torque bar and the play between escapement pawl tail and escapement torque bar 0,20-0,25mm (.008"-.010") must be maintained along the all writing line.
This procedure must be done after the adjustment procedure and during any escapement call.

APM FRAME 105
Tab Torque Bar Parallel.
1. Adjust the left torque bar backup screw (06-13) (07-13) to just touch the escapement torque bar.
2. With the carrier at left, check the clearance between the tab torque bar and escapement bracket. Move the carrier to the right and form the tilt pulley bracket lug so the clearance at the closest point between the tab torque bar and escapement bracket matches left side (Fig. 9).

Note: *The carrier return latch keeper (03-575) must be removed to make this adjustment.*



(Figure 9)

All other adjustments remain the same.
When all adjustments are correct, the carrier should not hang up or skip when slight pressure is put on the left side of the carrier during a repeat spacebar or repeat underscore operation.
Note: *Refer to "Selectric" APM (F/N 241-5939-1) for illustrations of early level machines.*

In case of persistant escapement failure:
1. New level escapement cam can be installed, see CEM No. 07-8.
2. The backup screw in combination with the short pawl mounting stud can be used to solve some escapement problems in the RB/S machine (loss of motion).
Note: *Torque bar backup screw cannot be installed on Non Rotary back space machines.*

07 6 Trigger Overthrow Stop — Redesigned

April 18, 1980

PURPOSE: The trigger overthrow stop (06-36) and (30-21) see Figure 1, are both with an open slot now.

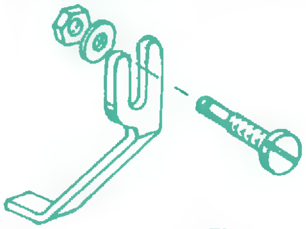


Figure 1.

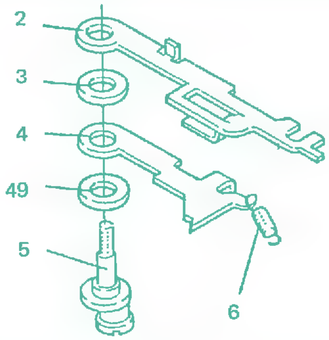
Note: *To make it easier to recognize, the soundhood-trigger overthrow stop is made in black oxide and the non-soundhood in zinc plating.*

07 7 Spacer In The Escapement Bracket

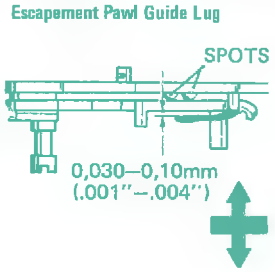
April 18, 1980

PURPOSE: To reduce lost motion when the pawl is activated.

SOLUTION: Add spacer (07-49) to escapement bracket. This spacer should be added between the pawl and the stud (see Figure 1).



ADJUSTMENTS: When making the "Escapement Pawl Guide Lug" adjustment, make sure that the pawl is contacting the two spots on escapement pawl guide (07-02) (See Figure 2).



Note: *If the above adjustment is difficult to obtain and the spacer is black, order new spacer (07-49). The black spacer is thicker and can be found on some machines.*

PARTS REQUIRED:

MECH/REF.	PART NO.	DESCRIPTION
707 49	1206692	Spacer

Spacer include in Field B/M
F/N does not change.

MACHINES AFFECTED:
Netherland Prod.: ABOVE serial number 1785252

SYMPTOM: No escapement or double escapement.

SOLUTION:

a) Check the level of escapement cam.
Change to new level if necessary. To recognize the new part look at the contour of the high point, it is sharper (See Figure 1).

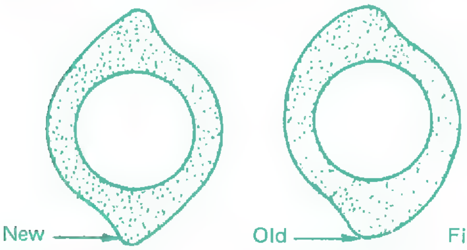


Figure 1

b) Escapement timing must be checked in this way.

1. Gear train backlash (Frame 2).

2. Cycle clutch drive (Frame 6).

3. Cycle clutch overthrow (Frame 7) using POWER ON ADJUSTMENT PROCEDURE.
The cycle clutch adjustments must be obtained with the power on as outlined in the following procedure.

Pre-Conditions:
The cycle shaft, filter shaft and print shaft must be properly timed.

The gear train backlash must be correct.

The remainder of the machine must be functional.

a) Leave the right-hand dust shield in place while performing this "power on" adjustment. This will eliminate the danger of the bristo wrench being thrown out of the machine due to the possiblity of it contacting the torque limiter hub. Rotation of the cycle clutch pulley and drive belt does not constitute a hazard as there are no exposed projections which could propel the bristo wrench out of the machine.

b) Turn machine on. Position the cycle clutch collar screw up, then position the carrier into the RH margin to prevent cycling of the cycle shaft.

c) Insert the "L" shaped foot of the Hooverometer into the cycle clutch latch link to prevent accidental cycling of the machine while performing the "power on" adjustment of the cycle clutch.
(See Figure 2).

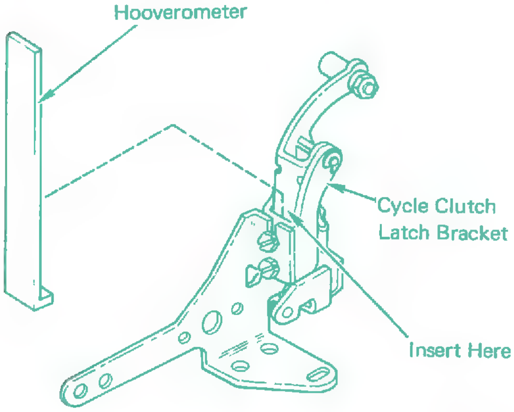


Figure 2

d) Loosen the cycle clutch clamp screw and advance print shaft (top-to-rear). **CAUTION:** *Do not trip the cycle clutch with the bristo-wrench in the clamp screw.*

e) At this time, check the left-to-right position of the cycle clutch spring. Expand the cycle clutch spring by pushing the LH side of the spring with a spring hook. The lateral position of the spring can be changed by pushing left or right for proper adjustment with the cycle pulley.

f) Rotate the print shaft a complete cycle (top-to-rear) until the cycle shaft check pawl drops in. Back the cycle shaft up against the check pawl.

g) Position the collar left-to-right so the sleeve will have 0,25-0,38mm (.010"-.015") end play.

Position the overthrow stop for 0.18-0.38mm (.007"-.015") clearance and tighten the clamp screw.

This will give approximately 1/2 tooth of motion to "unwrap" the spring in its rest position. Observe this motion at the print shaft gear by hand cycling a zero tilt, negative five character with the power off.

4) Filter shaft adjustment (Frame 11).

5. Print shaft timing (Frame 52).

6. Escapement timing (Frame 108).

The above mentioned order must be followed.

PARTS REQUIRED:

MECH/REF.	PART NO.	DESCRIPTION	QTY	STOCK ECHELON
706 07	8169949	Escapement Cam 8XX	1	D
	8169067	Escapement Cam 9XX	1	D

THE FOLLOWING INFORMATION FOR IBM USE ONLY

ORDER: Via COP Only.

08 - FRAMES

08 1 Center Bearing Check & Change

April 18, 1980

Note: *Use silver colour pusher for small bearing & black oxyde pusher for big bearing.*

Worn center bearing can cause:

1. Type head detenting keeps changing.
2. Motor speed is changing.
3. —5 Latch adjustment keeps changing.
4. Impression is different.
5. Smearing.
6. Noise.

Check for worn center bearing.

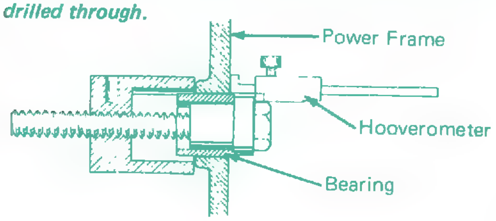
1. With type head installed, hand cycle-5character (Selection latches have to load under bail) until rotate detent is under head tooth, & remove head play.
2. Push down cycle clutch pulley. If movement of head is 1 mm (.040") or more, center bearing is worn.

Note: *Before changing center bearing, be certain that play is in center bearing & not only between cycle shaft & pulley hub.*

Center bearing installation:

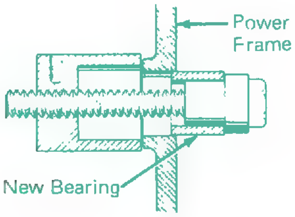
1. Remove cycle shaft asm., rotate bellcrank, cycle clutch latch & pulley.
2. Move operational shaft far enough out, to remove torque limiter, C/R & tab pinions.
3. Fit bearing tool as in Fig. 1. Check bearing position by fitting Hooverometer foot against power frame & move Hooverometer slider against bearing pusher (Fig. 1). This Hooverometer adjustment is used to check position of new bearing. By tightening bolt, push old bearing out of power frame.

Note: *If cup turns, any other tool can be fitted in hole of cup to prevent it from turning. Check if lubrication hole in power frame is drilled through.*



(Figure 1)

4. Align lubrication hole in new bearing so it lines up with hole in power frame when bearing is installed.
5. Fit bearing tool as in Fig. 2. Press new bearing into power frame until it is in same position as old bearing was (Fig. 1). Check with Hooverometer adjustment.



(Figure 2)

6. Install new cycle clutch pulley & cycle shaft (if shaft is worn). Lubricate small bronze bearing in pulley with IBM 23 grease.

Lubrication: Lubricate with IBM 23 grease.

Center bearing replacement tool P/N 9900523.

Center bearing P/N 1203726.

08 2 Escapement Shaft Bearing — Removal & Replacement

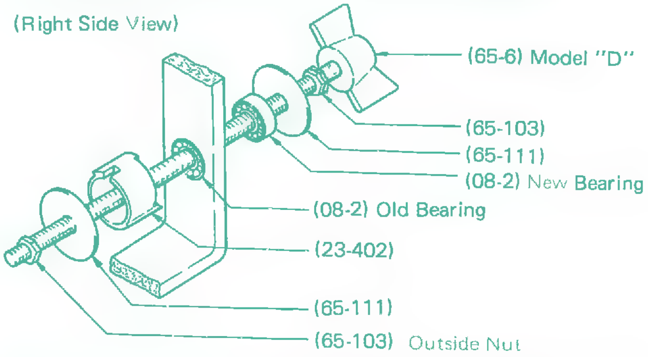
April 18, 1980

PURPOSE: To make replacement of escapement shaft bearing (08-2) easier.

SOLUTION: The following procedure can be used:

1. Remove motor assembly (11-100).
2. Remove cords and loosen front drum (19-18).
3. Remove mainspring backplate assembly (24-1).
4. Place bearing tool into power frame as shown in fig.

Note: *Install bearing with open end to the front of machine.*



5. Tighten outside nut (65-103) until the new bearing is pressed against the old bearing.
6. Check both bearings are in line and continue tightening nut. The new bearing will push the old bearing out.
7. Press new bearing into power frame until the rear of the new bearing is flush with the power frame.
8. Assembly parts in reverse order.

09 - MARGIN & LINELOCK

09 **1** April 18, 1980

Bell Mounting Stud — Field Installable

A field installable bell mounting stud (09-84) is now available for current level machines.

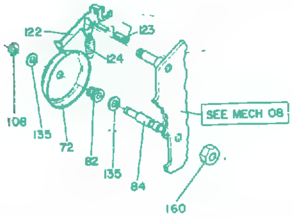


Figure 1

Note: *It may be necessary to punch or drill the old stud out of the keyboard side frame.*

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY	STOCK ECHELON
09	84	1279470	Stud, Bell Mounting	1	D
	160	37913	Nut	1	A

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Use Applicable Service Code

PARTS INFORMATION

ORDER: Via COP Only

10 - MARGINS (ROTARY B/S)

10 1 Margin Sliders — Binding

April 18, 1980

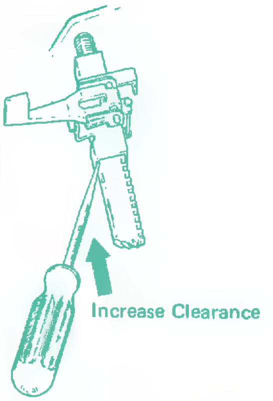
Binding margins on 7/8/9XX typewriters can be caused by the machine being too low in the covers. When experiencing this problem, raise the machine so there is a slight clearance between the margin slider and the chrome strip on the center cover.

10 2 Binding Margin Stops

April 18, 1980

Binding margin stops can usually be improved by increasing the clearance between the margin stop and margin rack. To make this adjustment, move the margin stops to the far left side to prevent damage to the margin rack.

Polishing the margin rack with Druite ® paper can also reduce a binding condition.



10 3 Margin Lever Replacement

April 18, 1980

The margin lever pin can be pushed out of its mounting by use of needlenose pliers. Place one jaw of the pliers on the inside of the bracket and the other jaw on the right end of the pin. Squeeze pliers and the pin will be pushed out. No cutting is necessary and the same pin can be used to mount the new margin lever.

10 4 Margin Stop Pin And Slider Installation

April 18, 1980

A new pin and slider assembly can be installed without cover removal. Hook the "T" end of the new slider in front of the margin stop where it normally belongs with the pin end aligned above the "U" slots in the margin stops. Pressing down on the pin end with your thumb will push the pin into the assembled position. Use your forefinger to support the rack.

CAUTION: *The margin rack must be held from rotating beyond the margin release position.*

10 5 Margin Bellcrank

April 18, 1980

PURPOSE: To stop unwanted correcting tape feed when typing through right hand margin.

SYMPTOM: As the carrier moves past the right hand margin, the bellringer bellcrank (10-8) may contact the inhibitor actuator bellcrank (26-126) when the margin release is activated. This can cause the correcting tape to feed a few spaces.

SOLUTION: Remove (stone, file or grind) approximately 1.27 mm (.050") of the bellcrank in the area shown (Figure 1) to provide minimal clearance between the bellringer bellcrank (09-106), (10-8) and the inhibitor actuator bellcrank (26-126). (The tip of the bellringer bellcrank should be kept round when removing material). After making this change check adjustment of the linelock bracket (09-5), and the linelock bail finger (09-80). Redesigned parts will be available at a later date to eliminate need for this procedure.

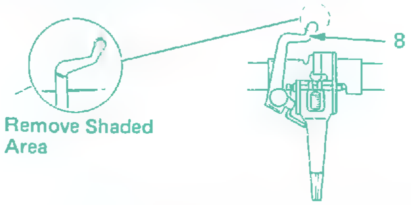


Figure 1

Note: *The bellcrank is a hardened part and forming is NOT RECOMMENDED.*

10 6 Uneven Left Margin

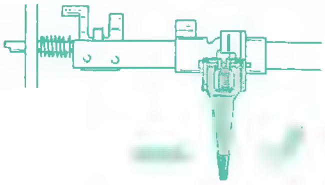
April 18, 1980

PURPOSE: Checks and adjustments to help resolve difficult overbank problems when margin, carrier return, and escapement adjustments appear correct.

SOLUTION: If failure occurs at ANY position of the left margin stop, follow procedures in section A. If the failure occurs only between 0 and 30 on the margin scale, follow procedure in section B.

Note: *The symptoms and solutions listed are the most common, but each problem is unique and may require use of section A and/or B.*

A. 1. APM frames 150 through 161 should be adjusted to specifications, note the following:
   - a. Frame 151 — Adj. for min. pawl clearance, PAWL MUST NOT DRAG while returning.
   - b. Frame 156 — Check the overbank guide adjustment while biasing the tip of the LH margin set lever in a counterclockwise direction. This stimulates the dynamic forces present during a machine powered carrier return. Ensure the switch pitch gear (DP) (10-29) or collar (single pitch) does not interfere with this adjustment.



   - c. Frame 160 — Adjust the torque limiter to low side of spec. for minimum return force with positive drive.

2. APM frames 333 through 341 should be adjusted to specifications, note the following:
   - a. Frame 336 — Make this adjustment while holding rail to right and remove play in rack to left.

B. Adjust the escapement mechanism as shown in CEM No. 07-5 with the following additional checks and adjustments.

The escapement rack bracket (DP machines) (07-20) must be positioned to prevent bending of the escapement rack.

Loosen switch pitch selector gear (APM frame 90) to decrease pressure on the escapement rack gear. Loosen bracket (7-20) and allow escapement rack to get natural rest position. Tighten bracket (7-20) without changing escapement rack rest position. Readjust APM, frame 90.

Note: *The carrier buffer (CEM No. 02-9) may be installed to increase carrier stability on marginally reliable machine. This is not recommended as a substitute for replacement of worn parts in the print sleeve/shaft area. Parts should be replaced if worn and the buffer used only on machines that appear unreliable after the above steps were taken.*

All APM frame numbers refer to APM form no. 241-5939-1.

April 18, 1980

10 7 Margin Rack — Single Pitch (Rotary B/S)

Two spacers (10-46, 24), a collar (10-44) and a setscrew (10-45) have been eliminated from the single pitch margin rack. This has been done by using a shorter spring (10-23) and installing the collar (10-30) from the opposite direction.

It is no longer necessary to use these parts (10-24, 44, 45, 46). If replacement of these obsoleted parts is necessary, the new shorter spring (10-23) should be used and the parts assembled as in Figure 1 (Level 2).

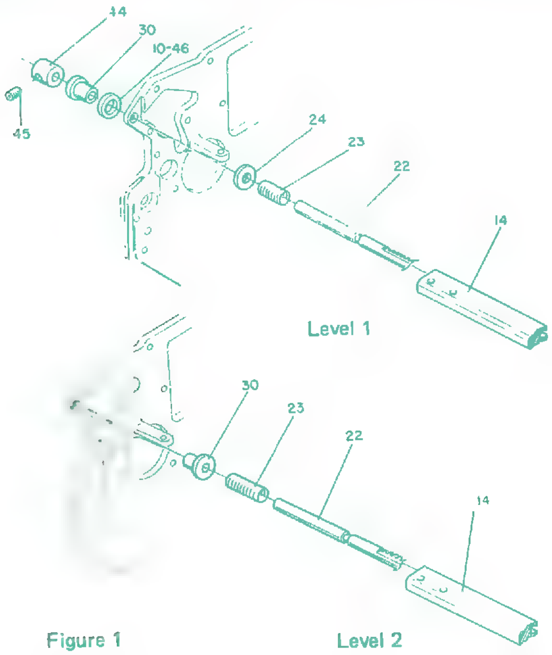


Figure 1

MECH/REF.		PART NO.	DESCRIPTION	QTY	STOCK ECHELON
10	23	1256549	Spring	1	D

THE FOLLOWING INFORMATION FOR IBM USE ONLY.

Service Code: 30/31

PARTS INFORMATION:

ORDER: Via COP Only.

10 - MARGINS (ROTARY B/S)

10 1 Margin Sliders — Binding

April 18, 1980

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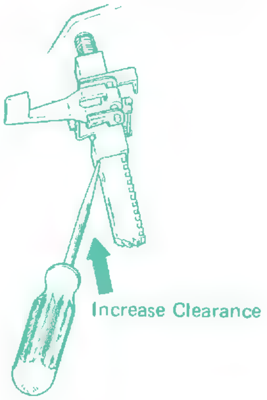
10 2 Binding Margin Stops

April 18, 1980

Binding margin stops can usually be improved by increasing the clearance between the margin stop and margin rack. To make this adjustment, move the margin stops to the far left side to prevent damage to the margin rack.

Polishing the margin rack with Druite ® paper can also reduce a binding condition.



10 3 Margin Lever Replacement

April 18, 1980

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April 18, 1980

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CAUTION: *The margin rack must be held from rotating beyond the margin release position.*

10 5 Margin Bellcrank

April 18, 1980

PURPOSE: To stop unwanted correcting tape feed when typing through right hand margin.

SYMPTOM: As the carrier moves past the right hand margin, the bellringer bellcrank (10-8) may contact the inhibitor actuator bellcrank (26-126) when the margin release is activated. This can cause the correcting tape to feed a few spaces.

SOLUTION: Remove (stone, file or grind) approximately 1.27 mm (.050") of the bellcrank in the area shown (Figure 1) to provide minimal clearance between the bellringer bellcrank (09-106), (10-8) and the inhibitor actuator bellcrank (26-126). (The tip of the bellringer bellcrank should be kept round when removing material). After making this change check adjustment of the linelock bracket (09-5), and the linelock bail finger (09-80). Redesigned parts will be available at a later date to eliminate need for this procedure.

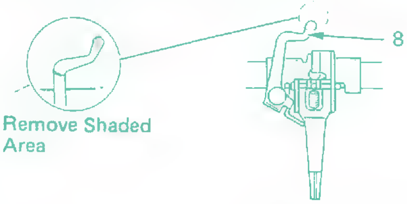

Figure 1

Note: *The bellcrank is a hardened part and forming is NOT RECOMMENDED.*

10 6 Uneven Left Margin

April 18, 1980

PURPOSE: Checks and adjustments to help resolve difficult overbank problems when margin, carrier return, and escapement adjustments appear correct.

SOLUTION: If failure occurs at ANY position of the left margin stop, follow procedures in section A. If the failure occurs only between 0 and 30 on the margin scale, follow procedure in section B.

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A. 1. APM frames 150 through 161 should be adjusted to specifications, note the following:
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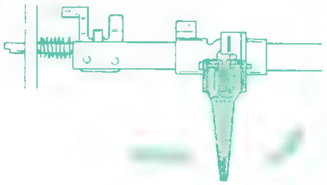
    b. Frame 156 — Check the overbank guide adjustment while biasing the tip of the LH margin set lever in a counterclockwise direction. This stimulates the dynamic forces present during a machine powered carrier return. Ensure the switch pitch gear (DP) (10-29) or collar (single pitch) does not interfere with this adjustment.



    c. Frame 160 — Adjust the torque limiter to low side of spec. for minimum return force with positive drive.
   2. APM frames 333 through 341 should be adjusted to specifications, note the following:
    a. Frame 336 — Make this adjustment while holding rail to right and remove play in rack to left.

B. Adjust the escapement mechanism as shown in CEM No. 07-5 with the following additional checks and adjustments.

The escapement rack bracket (DP machines) (07-20) must be positioned to prevent bending of the escapement rack.

Loosen switch pitch selector gear (APM frame 90) to decrease pressure on the escapement rack gear. Loosen bracket (7-20) and allow escapement rack to get natural rest position. Tighten bracket (7-20) without changing escapement rack rest position. Readjust APM, frame 90.

Note: *The carrier buffer (CEM No. 02-9) may be installed to increase carrier stability on marginally reliable machine. This is not recommended as a substitute for replacement of worn parts in the print sleeve/shaft area. Parts should be replaced if worn and the buffer used only on machines that appear unreliable after the above steps were taken.*

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April 18, 1980

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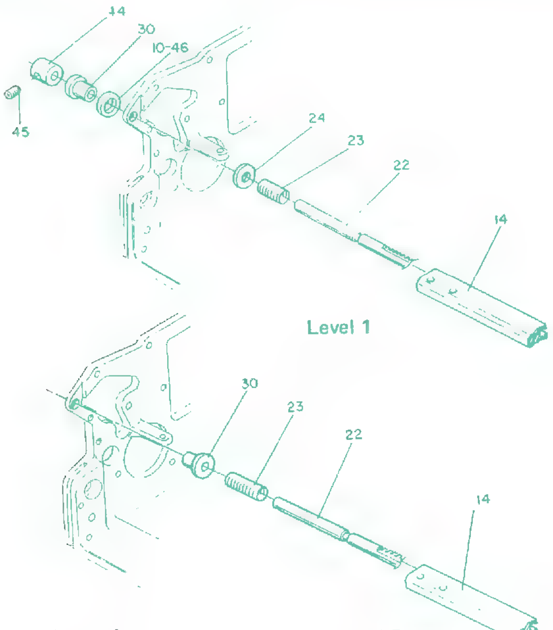
It is no longer necessary to use these parts (10-24, 44, 45, 46). If replacement of these obsoleted parts is necessary, the new shorter spring (10-23) should be used and the parts assembled as in Figure 1 (Level 2).



Level 1

Figure 1

Level 2

MECH/REF.		PART NO.	DESCRIPTION	QTY	STOCK ECHELON
10	23	1256549	Spring	1	D

THE FOLLOWING INFORMATION FOR IBM USE ONLY.

Service Code: 30/31

PARTS INFORMATION:

ORDER: Via COP Only.

11 - MOTOR & DRIVE

11 ① Electrostatic Discharge Feature

April 18, 1980

PURPOSE: To eliminate electrostatic build-up, caused by drive belt and pulleys.

SYMPTOM: Operator getting small electrical shocks when touching the cover.

Note: *Be sure that the static discharge is coming from the machine and not from the carpet or any polyester component around in the office.*

SOLUTION:
To install Static Elimination Bracket the following procedure should be used:

1) Remove motor package from the machine.
2) Remove motor plastic guard (11-103).
3) Install Static Elimination Bracket as shown in figure 1.

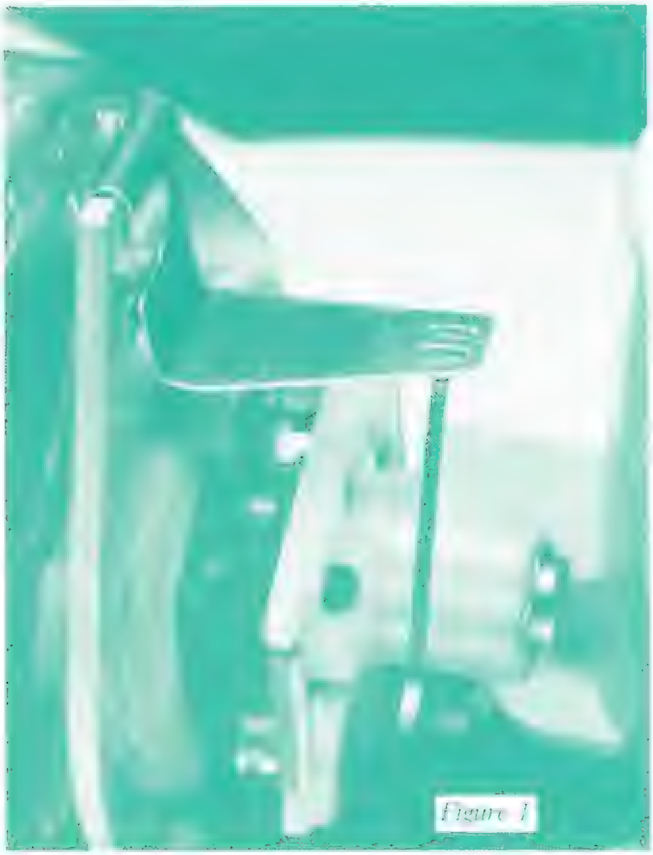


Figure 1

Note: *Make certain that vertical lug of Static Elimination Bracket touches motor frame and is installed between rubber motor mounting (11-106) and motor frame (see figure 2). In case of painted motor frame remove the paint. Check with meter for continuity.*

4) Re-assemble plastic motor guard (11-103).
5) Place motor package into machine.
6) Adjust motor pulley according to frame 9 (APM-241-5939) if necessary.
7) Center Static Elimination Follower in the middle of motor belt, by forming horizontal lug of Static Elimination Bracket (see figure 3).

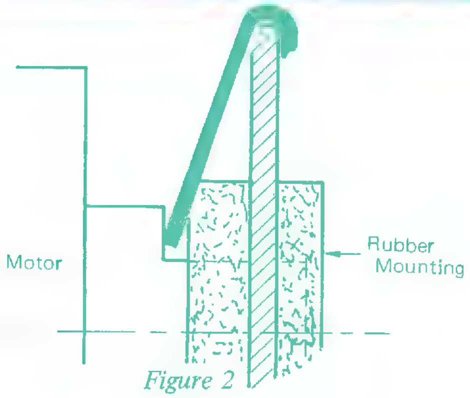


Figure 2

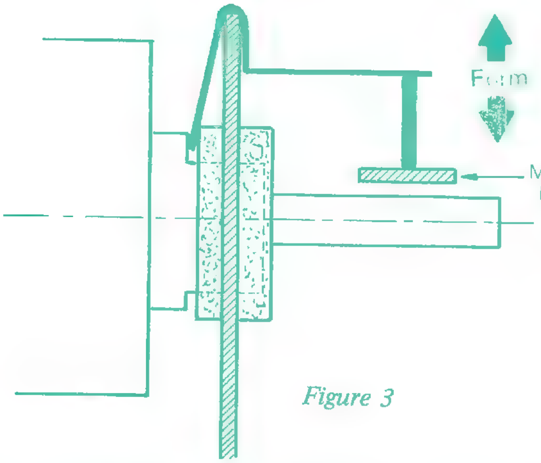


Figure 3

SAFETY PRECAUTION: This feature must maintain the "double insulation" requirement for safety standards.
The main requirement is to keep an air gap of at least 4 mm (.158") between the motor housing and accessible metal parts.

Note: *After each call ensure that the spring is in it's correct position. Moving of the belt left to right could move the spring out of it's correct position.*

PARTS REQUIRED:

MECH/REF.	PART NO.	DESCRIPTION
711 121	8170673	Static Elimination Bracket.

PARTS INFORMATION: This part is available for field use in GBG/I countries except FINLAND and CANADA.

THE FOLLOWING INFORMATION FOR IBM USE ONLY

ORDER: Via COP Only.

11 2 Motor Clutch Springs – Tension

April 18, 1980

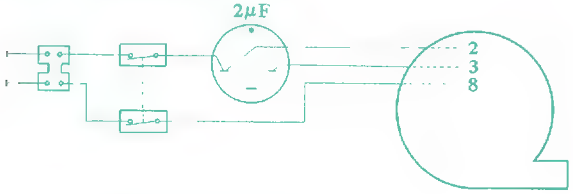
Do not shorten the centrifugal motor clutch pawl springs. This allows the pawls to engage at too high a motor speed causing them to bounce on the lugs of the motor pulley. This causes round edges on the pawls.

11 3 30 Watt Motor — Wiring Diagrams —

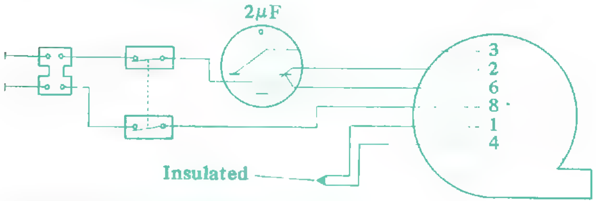
April 18, 1980

PURPOSE: The following wiring diagrams should be used for diagnostic purposes on the 30 watt motors (11-109) — with centrifugal clutch — used on Netherland Production.

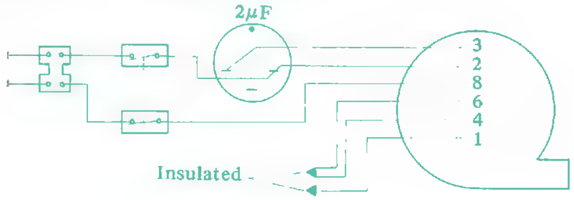
220V Motor Connected for 220V



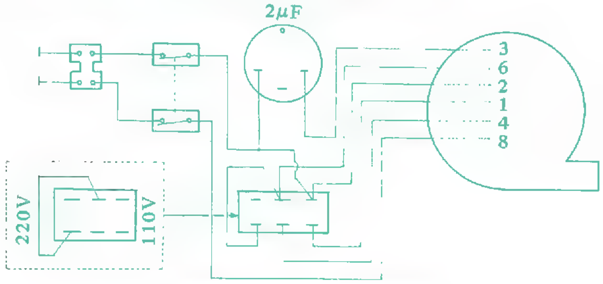
110/220V Motor Connected for 110V
120/240V Motor Connected for 120V



110/220V Motor Connected for 220V
120/240V Motor Connected for 240V



110/220V & 120/240V Motors with bi-voltage Switch



[illegible] No Colour

Note: *For Field replacement: order complete motor B/M (11-100).*

11 4 Motor Pulley And Belt Wear

April 18, 1980

When replacing a drive belt that has worn or stripped out cogs, also replace motor pulley (11-48).

11 5 Belt Replacement

April 18, 1980

1. Cut off old belt if you do not expect to use it again.
2. Disconnect latch bail springs, pull out latches, drop bail down.
3. Remove cycle cam shaft gear.
4. Remove cycle clutch check latch and spring.
5. Remove two screws and stud holding cam shaft bearing plate, and remove bearing plate. It may be necessary on some machines to remove the compensator from its mounting bracket. If so, follow steps 6 through 7.
6. Loosen print shaft gear, rotate head counterclockwise to loosen tape, and rotate print shaft to detent head.
7. Remove compensator mounting shaft.
8. Work belt off over cam shaft.

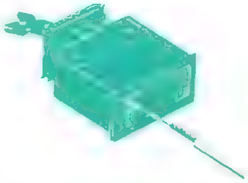
Replace in reverse order and adjust or check:

1. Check cam shaft end play, use shims if necesarry.
2. Adjust gear train for minimum backlash.
3. Adjust filter shaft timing, shaft end play.
4. Adjust print shaft timing, shaft end play.
5. Check escapement cam timing and spacebar interlock.
6. Check shift interlock cam.
7. Adjust belt tension.

11 6 Power Switch
US & Brazil Production

April 18, 1980

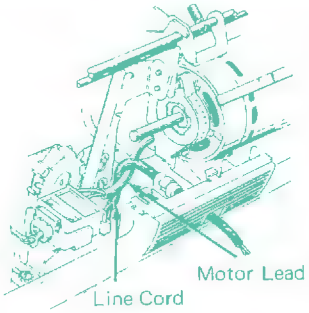
When experiencing electrical or switch problems on machines with the "quick wire" connection switches, it is possible that the wires are not being held firmly in place. If this condition exists, replace the switch.



11 7 Possible Electrical Hazard
U.S. & Brazil Production

April 18, 1980

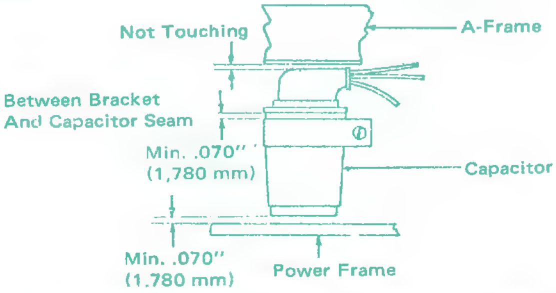
When changing linecord switch or motor, put line cord over motor lead insulating tube.
This prevents from coming in contact with motor clutch or drive belt.



11 8 Capacitor Insulation
U.S. & Brazil Production

April 18, 1980

It is possible that some machines A-Frame paper feed, capacitor is positioned too high contacted with lower part of A-Frame.



Note: *When replacing line cord, switch or motor on old level machines, reposition capacitor as shown in drawing.*
On next service call of inspection check capacitor is correctly positioned.

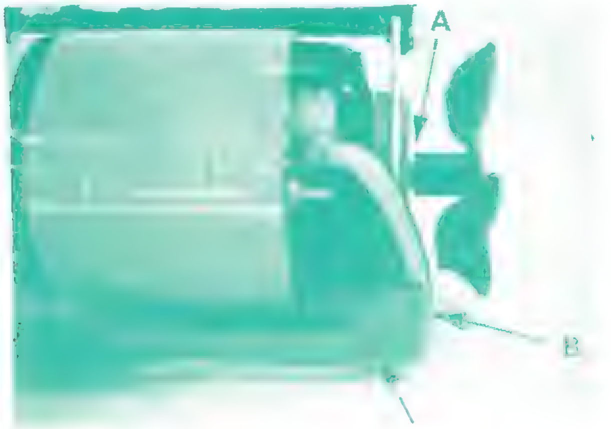
11 9 Electrical Safety Hazard Motor Cable Blank Wires WT 8XX With Sound Reduction Package

April 18, 1980

The outside motor fan (730-400) in WT 8XX machines with Sound Reduction Package can contact motor cable and make wires blank.

Plant will change motor unit and make hole in bottom to fit cable.

On installation check all 8XX with Sound Reduction Package & without hole in bottom of plastic bracket.
Look at photo.
A — Place fan hub 3 mm (.125") from motor.
B — Move motor cable away from fan & glue cable to plastic bracket.
Use 3M Industrial Adhesive 826, IBM P/N 261096 or equivalent.

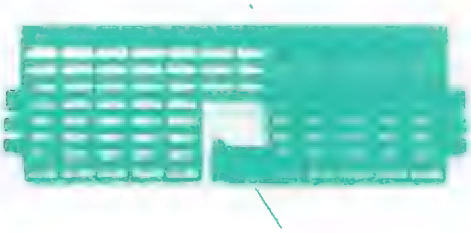


Improved Motor Unit fits Cable here

11 10 Motor Vent Grill — Double Insulation

April 18, 1980

Motor vent grill should have grill extension to keep double insulation standards.
Extension prevents stripping of linecord by bottom cover.
If extension has been broken or is missing VENT GRILL (704-80, 705-22) MUST BE CHANGED.



MACHINES AFFECTED:
US & Can. Production:
7/8xx machines with *label* "Double Insulation grounding not required" on rear of machine, or UL control number "286A" on *"patent label"*.
Neth. Prod.:
7/8/9xx machines with Sign ⧈ on *patent label*.

11 11 Modified 7/8XX Typewriter Motor For U.S. Government Agencies

April 18, 1980

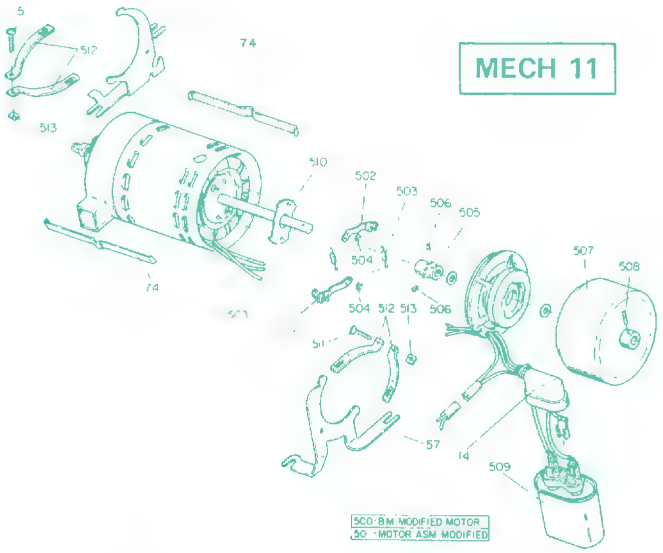
PURPOSE: Modified motors and associated parts are available for Field installation on Models 8X5 and 7X5 machines above U.S. S/N 4405000 only. This modification is necessary only when required by U.S. Government Agencies involved in special applications. In alle other areas, the regular motor is usually acceptable. **Do not use the modified motor in any other areas.**

If an installed machine is to be converted to the modified motor, the price of the B/M plus labor will be charged.

The warranty on motors, whether plant installed or field installed, is 1 year. These machines will be accepted for the Standard Maintenance Agreement at the standard price, but the motor will be excluded in the event that a replacement motor is needed on an M/A machine, the customer will be charged for the motor only. No labor will be charged.

For additional information and part numbers not indicated, contact CE management.

CAUTION: *Safety — On 2-wire machines the motor and capacitor* **must not** *be grounded. On 3-wire machines, the motor and capacitor* **must be** *grounded. Also, ensure that the proper capacitor is ordered.*



MECH 11

THE FOLLOWING INFORMATION FOR IBM USE ONLY

ESTIMATED INSTALLATION TIME: 1.5 Hrs.

RECORDS: This is a permanent CEM and should be retained as this information will **not** *be included in the catalog revision.*

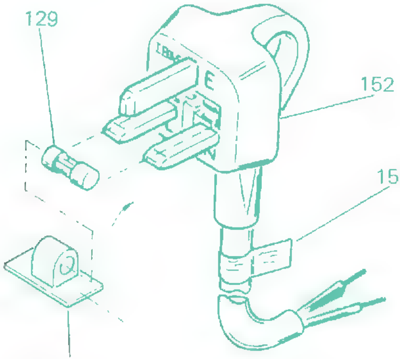
Use Applicable Service Code.

PARTS INFORMATION: Parts are available at Lexington. Order only as needed.
Motors and B/Ms orders, need Management approval and must be ordered by MES.

April 18, 1980

11 12 2–Wire Linecord U.K. and S.A. (United Kingdom/South Africa) Only

A 2-wire linecord has been designed and will be implemented in 8/9XX double insulated machines for U.K. and S.A. The fuse of this linecord will be protected by a fuse cap (see Figure).



Fuse Cap
P/N 8171071

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	STOCK ECHELON
711	152	8171231	Linecord U.K. Incl. 3A Fuse and Fuse Cap	D
	152	8171232	Linecord S.A. Incl. 3A Fuse and Fuse Cap	D
—	—	8171071	Fuse Cap	
	—	1304987	Label, 2-wire (U.K. Only)	

Note: *The 3-wire linecords with P/N 6520632 – U.K. and 8168817 – S.A. are still available and have to be used for all grounded machines. The Fuse Cap P/N 8171071 can be used for 2-wire as well as for 3-wire linecords.*

MACHINES AFFECTED:
Netherland Prod.: all 8/9XX machines
Before the implementation of the 2-wire linecord, the 8/9XX production will have installed the Fuse Cap on 3-wire linecords.

THE FOLLOWING INFORMATION FOR IBM USE ONLY.

Use Applicable Service Code

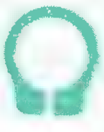
PARTS INFORMATION:

ORDER: Via COP Orly.

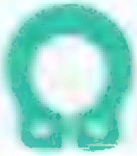
April 18, 1980

11 13 Clip On Motor Shaft – Loose

To avoid the clip (11-149) coming loose on the motor shaft and blocking the machine, this clip has been replaced by a stronger one with P/N 1133746.



Old Level



New Level

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY	STOCK ECHELON
11	149	1133746	Clip	1	A

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Service Code: 30/31

PARTS INFORMATION

ORDER: Via COP Orly

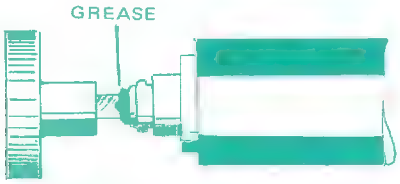
12 - PLATEN

12 1 Platen Noise

April 18, 1980

Noise can be caused by movement between platen release shaft & platen core.

If you have this problem, put IBM No. 23 Grease on platen release shaft (look at figure) & push L.H. Knob several times to get grease inside core.

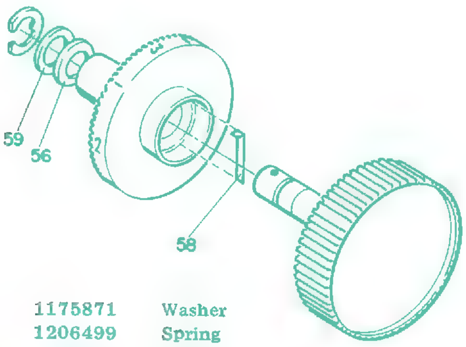


12 2 Page End Indicator, Bias Spring — New

April 18, 1980

US ONLY

New leaf spring has been added for more reliable bias on page end indicator. If you have problems of loose indicator, it is possible to form (bend) *existing* ring spring (712-51). If additional bias is needed remove ring spring (712-51) and install new spring (712-58). This new spring needs additional washer (712-59) between C-clip and washer (712-56) (look at figure).



PARTS

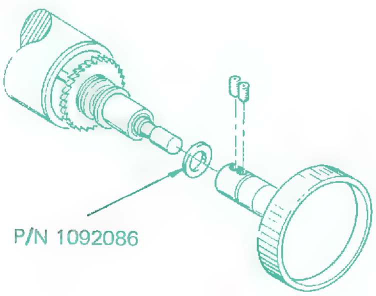
ADD:

712	56	1175871	Washer
	58	1206499	Spring
	59	1206791	Washer

12 3 Platen Knobs — Redesigned

April 18, 1980

Platen knob mounting has been redesigned and it is now being manufactured with the set-screws in line (see figure) to reduce the possibility of knob loosening.



PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION
12	55	Remain the same	Platen Knob
	55	8171070	B/M inc. Platen Knob and Spacer
		1092086	Spacer

Note: *The washer has to be added on the R.H. side to prevent blocking of the bushing (12-2).*

MACHINES AFFECTED:

Netherland Prod.: all 8/9XX machines

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Service Code: 30/31

PARTS INFORMATION:

ORDER: Via COP Orly

13 - FABRIC RIBBON

13 1 Ribbon Tracking

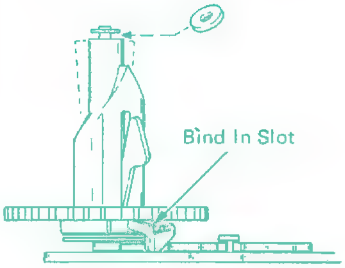
April 18, 1980

Power-on ribbon tracking can be easily observed on any fabric ribbon machine by placing a piece of correcting-type paper at the front side of the ribbon with the correcting side toward the ribbon. By typing a series of characters at each lift position, a visible, non-damaging indication of tracking results.

13 2 Reverse Failures — Trigger Bind

April 18, 1980

Some reverse failures are due to ribbon assemblies which are not long enough. This allows the reverse trigger to bind in the slot of the ratchet. To fix the problem, install a washer (P/N 1175195) as shown.



13 3 Reverse Failure Brake Tension

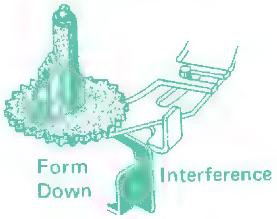
April 18, 1980

Uneven (light/dark) printing of the characters on a fabric ribbon near either end of the supply spools may indicate incorrect ratchet brake spring tension. These springs should be formed to drag on the ratchets enough to produce a tightly wound ribbon. If either spool winds loosely, the reverse trigger will be allowed to operate at different points along the ribbon toward the end of the ribbon, thus producing the light and dark pattern.

13 4 Reverse Failure Lift Lever

April 18, 1980

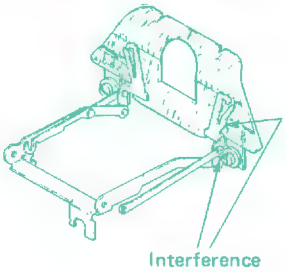
Intermittent ribbon reverse problems can be caused by interference between ribbon lift lever and ratchet check lever. This usually happens in the center and high lift positions. Form the ribbon position lever down to remove this condition.



13 5 Fabric Ribbon Lift Guide — Interference

April 18, 1980

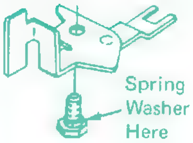
The free flight of the element may be limited due to interference between the lift guide and the card holder. This will usually affect low velocity characters on a stencil application.



13 6 Ribbon Load Lever — Excessive Vertical Motion

April 18, 1980

Excessive vertical motion of this part may be unwanted by the operator. This may be corrected by installation of spring washer, P/N 1072477, between the stud and the lever.



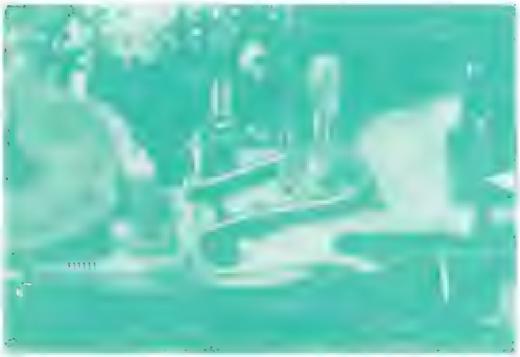
14 - FILM RIBBON

14 1 Film Ribbon — Folding & Tracking Problems

April 18, 1980

When experiencing tracking problems with film ribbon "Selectrics" due to folding the ribbon, check the following:

1. **Ribbon Plate Adjustment Tip:** When all adjustments are correct and the film ribbon fails to track properly, folds at the right guide or contacts the tape-up spool, the right front guide may need adjusting. Forming to the right will lower the ribbon; left, will raise it. Do not form too far to the left so that the lug contacts the spool.



2. **Lift Guide:** Film ribbon folding can be caused by a bending action of the ribbon lift guide assembly as a result of interference between the card holder mounting screw and the lift guide.

3. Ribbon tracking and folding can be affected by a dirty and sticking shock spring sleeve. Keep the sleeve and wire clean.

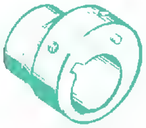
4. **Shock Spring:** Ribbon folding may be fixed by reducing the tension of the shock load extension spring. **Caution:** The tension of the spring must be enough to positively detent the shock load spring into the supply spool ratchet teeth or uneven feed will result.
   Also, be sure the shock spring angle is correct.

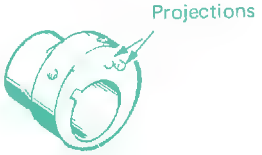
14 2 Ribbon Feed And Detent Cams — Identification

April 18, 1980

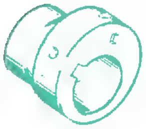
The fabric ribbon feed and detent cam can be identified by neither two square indentions or two projections.

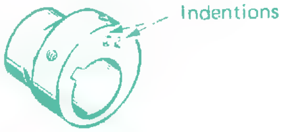
The film ribbon feed and detent cam is identified by one square indention or one round projection.


Film Ribbon



Fabric Ribbon


Film Ribbon



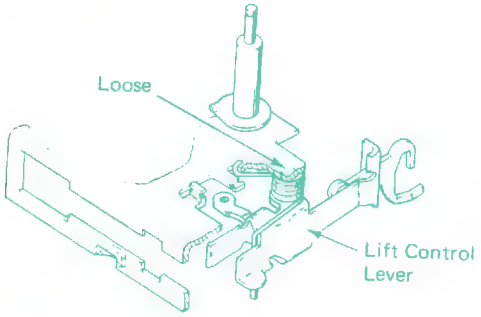
Fabric Ribbon

15 - SELECTIVE RIBBON

15 1 Lift Control Lever Mounting Stud — Loose

April 18, 1980

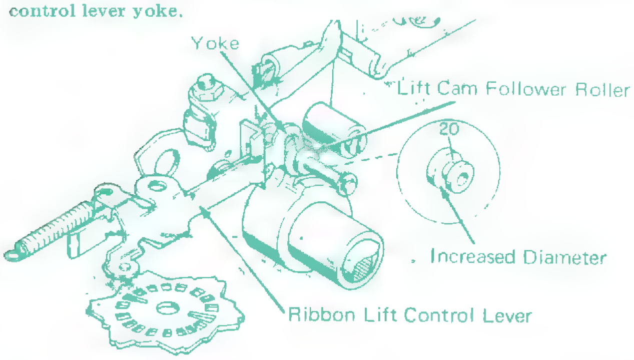
In case of intermittent ribbon lift failures with selective ribbon mechanism, check mounting stud of lift control lever, (715—76).
If loose, change ribbon plate assembly (715—151) P/N 6519998 or (726—20) P/N 1206023.



15 2 Yoke Of Ribbon Lift Control Lever — Breakage Or Slipping Off Roller

April 18, 1980

Diameter of follower increased to prevent it from slipping out of control lever yoke.

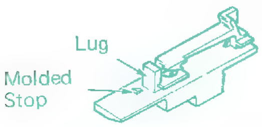


Note: *If yoke breaks or roller slips out, install bigger roller on earlier machines too.*

15 3 Stencil Lever - Redesigned - Selective Ribbon

April 18, 1980

Stencil lever (715-80) has been redesigned with a moulded stop to prevent lever from slipping out of ribbon plate (715-86) when pushed too far left (look at figure).



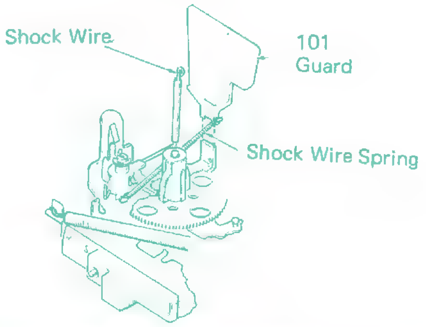
To install redesigned stencil lever:

1. Remove C-clip (15-21) from lift cam follower.
2. Move stencil lever (15-80) to the left and disengage it from the ribbon plate.
   Note: *Do not overstretch spring (15-79) but remove it from old stencil lever and install it immediately on the new.*
3. Insert screwdriver through opening in the ribbon plate and move the ribbon lift control lever (15-76) to the left and install new stencil lever.
4. Ensure that lift cam follower roller is properly engaged in lift control lever and reinstall C-clip. Check adjustment No. 267, lift control lever and 252 stencil adjustment.

15 4 Selective Ribbon Guard — For Field Use

April 18, 1980

New ribbon guard is available for field use to prevent ribbon breakage caused by wrong ribbon installation on selective ribbon machines. Install guard as in figure & hook shock wire spring to lug on guard.

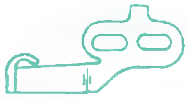


Note: *Hold ribbon plate to prevent flexing, when you install guard.*

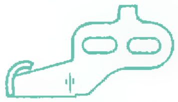
15 5 Ribbon Spread Plate — Redesigned

April 18, 1980

Due to slots in spread plate not being long enough to allow for correct adjustment (PRAM, Frame 263) redesigned spread plate (715-22) is stronger and has shorter lever extension (look at figure).



OLD

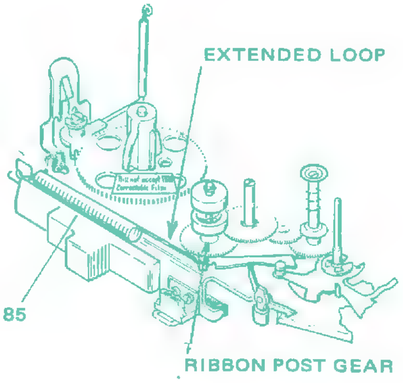


NEW

15 6 Swing Arm Spring — Correct Installation

April 18, 1980

If changing or removing swing arm spring (715-85), make certain you re-install spring with extended loop on top to prevent interference between extended loop & ribbon post gear (715-92) (look at figure).

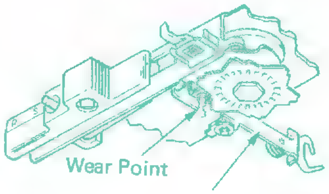


15 7 Lift Control Lever Stud — Wear

April 18, 1980

If selec. or correct. Ribbon Lift Mech. gives intermittent failures, check lift control lever stud (715-76) for wear. Replace lift control lever if necessary.

Note: *Stud can be easily checked with machine in stencil position.*



15 8 Feed Gear Adjustment — Selective Ribbon

April 18, 1980

When replacing feed gear (715-92) & intermediate gear (715-55) due to wear of the teeth, make certain ribbon mode button grip clip is adjusted up or down on ribbon feed post for 0.13—0.51 mm (.005"—.020") clearance between lower feed gear and first intermediate gear (with mechanism in film ribbon mode). Bottom of large ribbon feed gear should be flush with bottom of small intermediate gear.

FILM RIBBON MODE

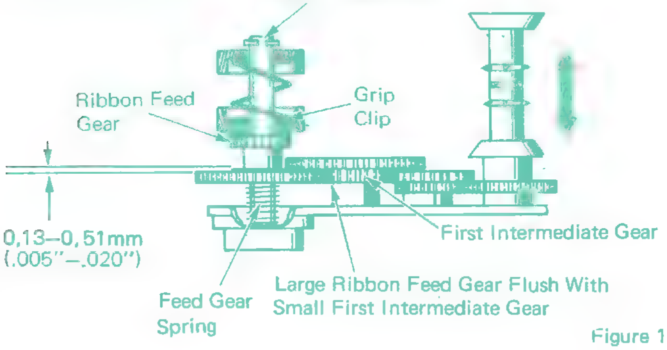


Figure 1

Note: *If adjustment is needed:*

a. *Make sure load lever spring clears ribbon feed gear with minimum of 0.13mm (.005") in ribbon load position. Form load lever spring.*

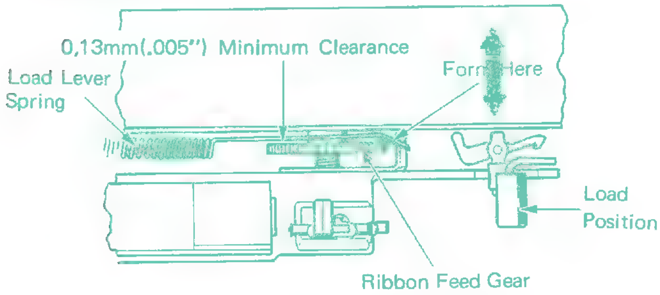


Figure 2

b. *Make sure load lever spring clears ribbon cartridge in operated position. Form load lever spring if needed.*

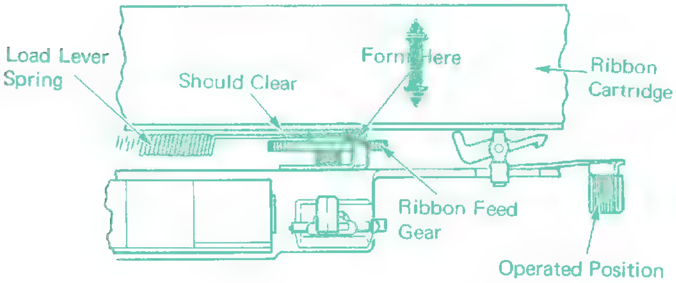


Figure 3

15 9 Ribbon Lift Arm — Damaged Screw

April 18, 1980

PURPOSE: If the mounting screw hole for the ribbon lift arm is damaged, an additional nut (15-5) can be added to the inside of the carrier to retain the screw (15-6).

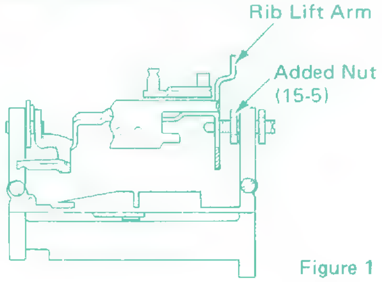


Figure 1

Note: *Effects Mag Media Selective Ribbon as well.*

PARTS REQUIRED:

MECH/REF.	PART NO.	DESCRIPTION	QTY	STOCK ECHELON
15 05	6503	Nut	1	A

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Use Applicable Service Code

PARTS INFORMATION:

ORDER: Via COP Only

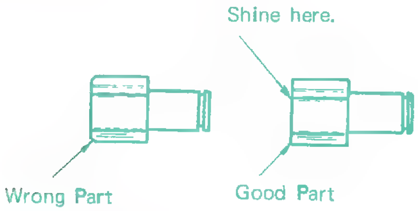
16 - SHIFT

16 ① Mylar Shim — Removed

April 18, 1980

PURPOSE: To prevent keyboard lock after shift and/or too slow shift operation.

Due to have too much clearance between shift cam and arbor, the Mylar Shim (P/N 1128285) is removed from all Amsterdam products. Remove Shim on machines with this problem. Be sure, edge on shift arbor is sharp and spring is well lubricated with IBM 23 grease.
In case of noise make a shiny surface on LH side of shift arbor with oilstone P/N 18463.



MACHINES AFFECTED:
Netherland Prod.: above 1520000.

16 2 Shift Drive — Adjustment Check

April 18, 1980

The shift clutch spring brake adjustment and proper overthrow stop adjustments can easily be checked by manually holding the detent roller away from the shift cam. After completion of either shift cycle, allow the detent roller to contact the shift cam. The detent roller should not rotate the cam more than 0,8 mm (1/32") in either direction when the detent roller is fully bottomed in its cam detent notch.

16 3 Shift Arm Roller Wear

April 18, 1980

When taking a call as a result of malselection and no problem can be located, don't overlook the possibility of a worn shift arm roller. In most cases reported to date, wear of the roller has been caused by a rough finish on the shift cam. Replace cam along with roller if necessary.

16 4 Shift Clutch Spring — Adjustment

April 18, 1980

1 to 3 Minutes:

1. Install shift clutch spring; allow the retaining plate screws to remain loose.
2. Place shift cam in uppercase position and hold in detented position.
3. Install clutch ratchet (uppercase position) so that its lug is toward the front of the machine and in front of the release arm lug.
4. Manually rotate the ratchet (clockwise) until the shift release arm lug now lies directly under the center of the clutch ratchet lug. The shift clutch spring and retaining plate will slip to a new position.
5. Remove the clutch ratchet and, without changing the setting, tighten one screw in the retaining plate. Do not allow the cam to become undetented.
6. Now reinstall the clutch ratchet, using the same spring hole as was previously used, and place it against the shift release arm manually lock down the shift keybutton).
7. Set the overthrow stop clearance 0,25-0,64mm (.010"-.025") and tighten the other retaining plate screw.

19 - TAB (ROTARY B/S)

19 1 Stamped Tab Rack — New Adjustment Procedure Models 7/8/9XX SINGLE PITCH

April 18, 1980

PURPOSE: For more reliable tab operation.

SYMPTOM: Tab stops cleared after repeated tab operations.

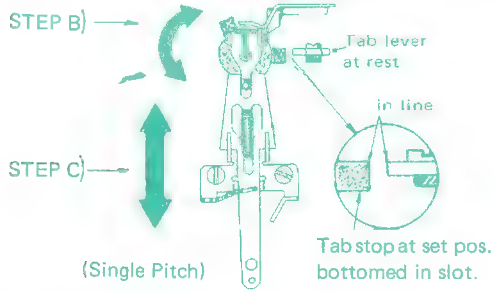
SOLUTION: To reduce above problem, adjustment frame 185 (APM 241-5939-0) should be made as follows:

ADJUSTMENTS:

a. Manually set a tab stop until it is bottomed in the slot of the rack.

b. Loosen tab rack screw (18-44) and rotate tab rack radially until the top surface of the tab stop is in line with the top surface of tab lever pawl (see figure).

c. Form tab set lug up or down to ensure that the tab stops are bottomed in their slots when the tab set button is operated.



Note: *Check above adjustments along various positions of the tab rack and refine if necessary. Check also that tab lever pawl contacts the final tab stop (18-10) correctly.*

MACHINES AFFECTED:
Netherland Prod.: only.

19 2 Tab Set And Clear Bracket Dual Pitch Machines

April 18, 1980

When replacing the grease filled tab rack with the friction rack (19-31) in machines with the rod paper feed, the set-clear bracket (19-2) should not be changed. The new bracket (19-2) will interfere with the tie rod frame. The old style bracket can be adjusted for proper operation.

19 3 Transport Cord Pulley Assemblies — Redesigned

April 18, 1980

The transport pulleys (03-365, 03-366, 18-130, 19-149) have been changed to molded plastic (Fig. 1). Plastic and steel assemblies are interchangeable. Steel pulleys will remain available until existing stock is depleted. Individual parts for these assemblies will not be available.

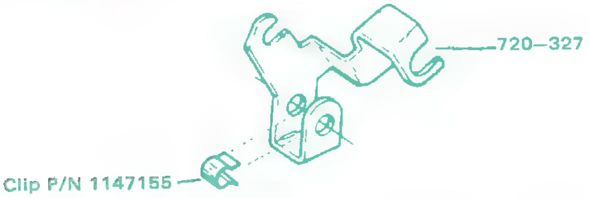
Figure 1

20 - INDEXING

20 1 Index Bracket 'A' Frame — To Reduce Lost Motion

April 18, 1980

To reduce lost motion of index operation clip P/N 1147155 can be added as shown.



20 2 Lever Index Link C-Clip — Breakage

April 18, 1980

PURPOSE: On all 8/9XX dual pitch the following can be checked to prevent lower index link C-clip from breaking.

1. Check that the index transfer bellcrank stoplug is not worn (CEM 20-4).
2. Check that the index transfer bellcrank (20-14) does not have excessive end play. Add additional ball clips (03-632, P/N 1147155) to hold this adjustment if necessary.
3. Make sure the lower index link is vertical. If it is not, it can cause pressure to the C-clip. Adjust the switch bracket left or right for this adjustment.

Note: *Make sure the link does not bind in the transfer bellcrank slot (Figure 1).*

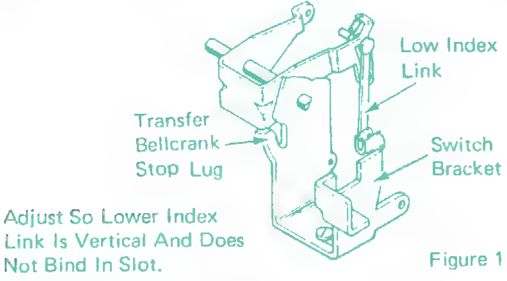
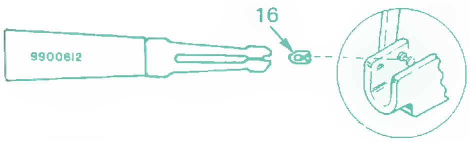

Low Index Link
Transfer Bellcrank Stop Lug
Switch Bracket
Adjust So Lower Index Link Is Vertical And Does Not Bind In Slot.

Figure 1

If clip breaks, replace with new C-clip, P/N 1290995.

Note: *Caution should be taken when installing the new clip. It is possible to damage the clip by applying too much pressure. Use the new C-clip tool (P/N 9900612) and push clip over stud to the first opening. (Figure 2).*



PARTS REQUIRED:

MECH/REF.		PART No.	DESCRIPTION
20	16	1290995	Lower Index Link C-clip

20 3 Index Interlock Lever, Transfer Bracket, Index Transfer, Bellcrank and Index Bellcrank Shaft — Redesigned.

April 18, 1980

Index interlock lever (24-20) and index bellcrank shaft (3-617) have now three small lugs (figure 1). Transfer bracket (24-9) and index transfer bellcrank have elongated holes to allow installation of the new index interlock lever and index bellcrank shaft.

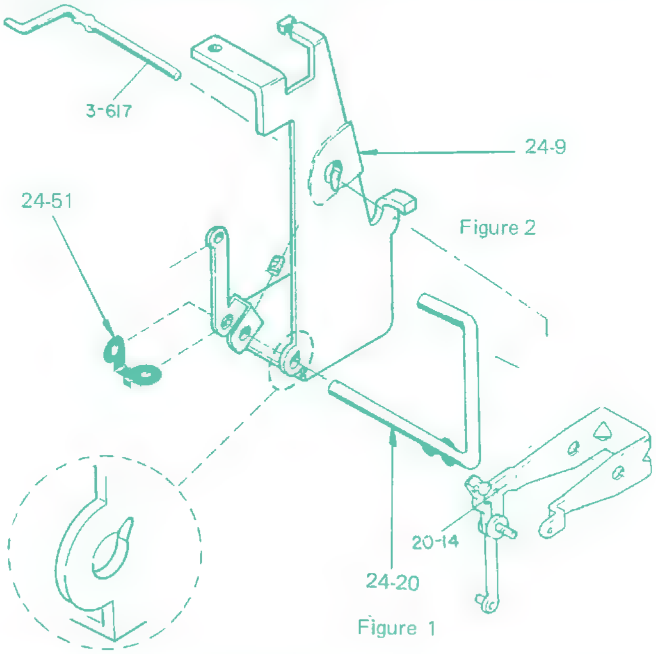


Figure 2

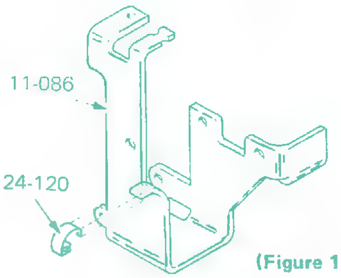
Figure 1

Note: *If new level index interlock lever (24-20), index bellcrank shaft (3-617), index transfer bellcrank (28-14) or transfer bracket (24-9) has to be installed, it will be necessary to change all four parts to new level.*

20 4 Index Transfer Bellcrank Stop Lug Wear — Dual Pitch

April 18, 1980

If index transfer bellcrank stop lug is worn install metal clip (724-120) P/N 1287925, on stop lug as shown in figure. Wear on stop lug can cause extra index operation during backspace and intermittent index failure. Clip can be formed for more positive fit.



(Figure 1)

20 5 Index Failures

April 18, 1980

The reliability of the carrier return or index mechanisms may be affected by excessive feed roll pressure, binds in the paper feed mechanism or platen latches, binding platen bushings, excessive carrier return torque limiter or spring clutch pressure, or any other malfunction that would cause an increased load on the mechanism.

On long carriage machines (7X5-8X5), bending of the operational shaft, because of a loose or maladjusted operational shaft support, allows lost motion in the index/carrier return cam system, resulting in occasional failures under heavy loads, i.e. heavy envelopes, thick carbon copies, etc. In addition if the interposer bail adjustment is marginal, bending of the operational shaft may result in unwanted repeat indexing and/or carrier return operations.

It is recommended that the plastic operational shaft support be replaced with the sintered iron support.

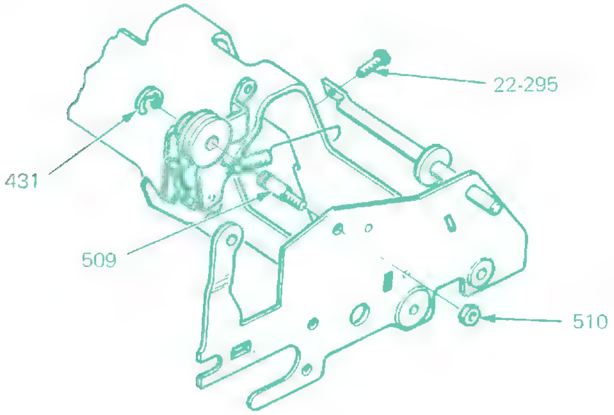
20 6 Index Pawl Assembly Stud — Field Replacement

April 18, 1980

SYMPTOM: Index pawl assembly stud loose or broken.

Tap the hole of the paper frame (22-49 or 266) with a 4-40 tap or a self-tapping screw such as the one on the index selector lever mounting stud (22-295). Install the stud (20-509) and nut (20-510).

It may be necessary to form the platen latch to the right to remove interference between the nut and latch. Reinstall pawl assembly and "C" clip (20-431).

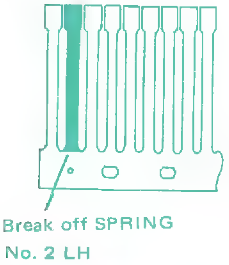


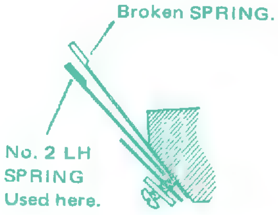
21 · KEYBOARD

21 1 Change Of Broken Keylever Spring. For Short Time Use Only

April 18, 1980

See figures for change of broken spring. Use L.H. spring No. 2. Remove all parts of broken spring.
Code 721 Ref. 135.

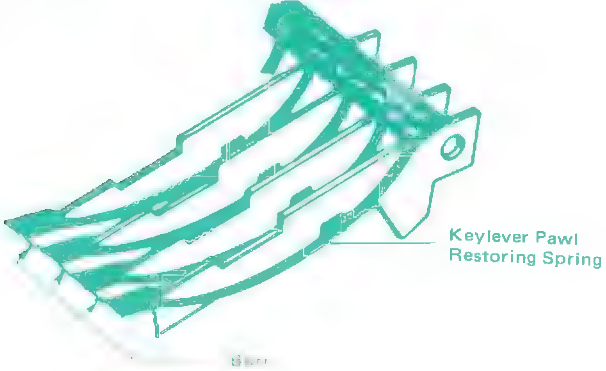




21 2 Keylever Pawl Restoring Spring

April 18, 1980

Check keylever restoring spring (721-42) for burrs between spring tips if you have problems to get keylever pawl at rest after operation (look at figure).



21 3 Interposer Replacement Procedure — Without Lifting Keyboard

April 18, 1980

When you need to change a single interposer, the following procedure can be used:

1. Unplug the machine and leave switch button at ON position.
2. Remove covers.
3. Remove interposer restoring spring (721-112).
4. Latch down the interposer to be replaced.
5. Remove two buttons in row 2 and 3 (next lower positions to latched interposer).
6. Remove clip (721-124). Disconnect interposer by sliding rod (721-123) from side of machine. Use another Fulcrum rod P/N 1123963, as a tool to maintain other interposers in place.
7. Tilt machine to service position. Push interposer top to rear between same keylever and next lower position.
8. Tilt machine down. Through third row (keylever without button), hook the interposer and pull it out.
9. Reverse procedure for installation.
10. Perform a functional check.

Method Revised by Mr. Joaquin Olmos — Guadalajara — Mexico.

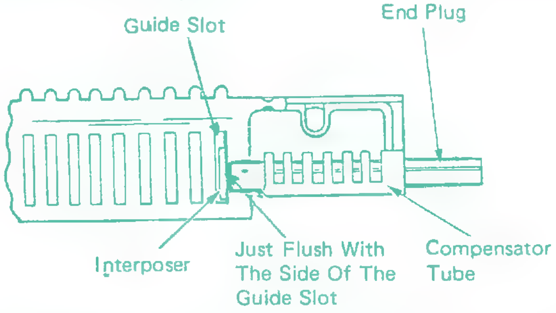
21 4 Compensator Tube, New Adjustment Procedure

April 18, 1980

PURPOSE: To ensure end plug stays in position on 9XX machines and for standardization, the 2 outside balls of the compensator tube are removed.

ADJUSTMENTS: When adjusting compensator tube (Frame 22 in APM. 241-5939-0) the following procedure should be used:

1. Loosen the right end plug.
2. Latch down the extreme right interposer.
3. Depress any keylever in the center of the keyboard until the extreme right interposer is in contact with the right side of the guide slot.
4. move the end plug against the interposer and tighten.
5. Repeat the same procedure for the left side of the keyboard using the extreme left interposer.



Note: *Excessive pressure of the end plug against the extreme right of left interposer will cause a bind.*

MACHINES AFFECTED:
Netherland Prod.: Plant installed above approx. S/N 1347279.

21 5 Keyboard Repeating Character, Extra Cycle Or Bad Touch

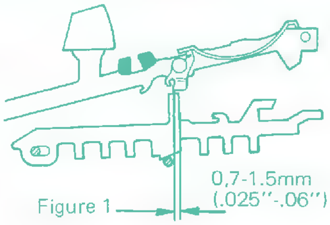
April 18, 1980

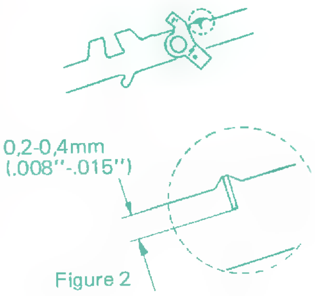
SOLUTION: Adjustment of APM 241-5939 Frame 16, 17, 19, 20 and 21 must be checked and if necessary adjusted accordingly first. When these are correct, two important basic adjustments must be checked.

ADJUSTMENTS:

1. Keylever pawl bite front to rear must not be more than half the length of the interposer upright lug (see Fig. 1).

   a) If only one or two keylevers have too big bite, do as follows: With the tip of wiring cutter plier make a little indent on the keylever where the keylever pawl rests. To do this, lift up leafspring with springhook and turn keylever pawl to rear (see Fig. 2).





b) In case of several keylevers having too much bite, the keylever support (21-05) should be bent to move the pawl in the wanted direction. On a level 3 keylever support (punch pressed) it can be done like this: Place a medium screwdriver on support between keylevers (where the keylever with the biggest bite is) and hit the screwdriver with a small hammer. Observe the bite between hits and take care not to damage leafsprings. (See Fig. 3).

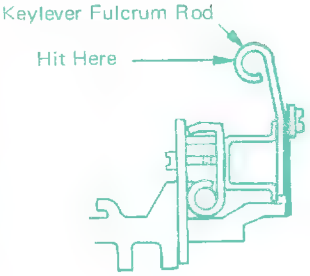


Figure 3

2. Interposer moves too far down. To check this, hold a keylever all the way down, check the play between bottomm of the slot in the rear interposer guide comb and the bottom of the interposer. The distance should be 0.20 - 0.38 mm (0.008-0.015") See Fig. 4.

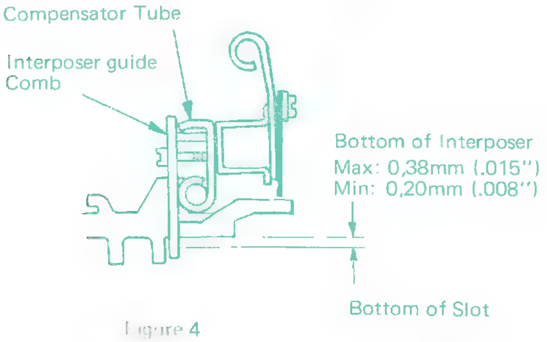


Figure 4

If more, the rear interposer guide comb must be moved without moving the compensator tube. Hold a medium screwdriver on the bottom of the guide comb and tap it with a small hammer. At the same time support the top of the compensator tube with a big screwdriver, to hold adj. 14 APM (See Fig. 5).

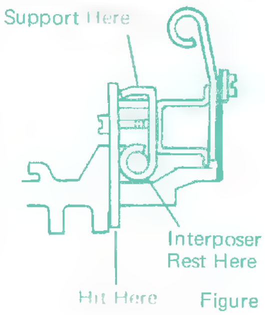


Figure 5

Note:
The 4 screws in the guide comb MUST NOT be loosened.
Make all checks and adjustments LH and RH of keyboard.

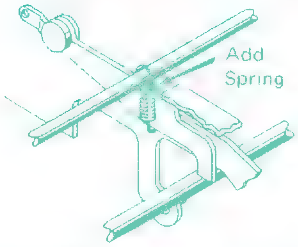
Caution:
Always check adjustment No. 14 before and after doing this to make sure the compensator tube has not moved.

For more Keyboard Adjustment Information See Video-tape made by PCE-Amsterdam.

21 6 Flicking

April 18, 1980

A spring, P/N 1090343, may be added between the cycle clutch trip bail and the pawl of the cycle clutch link to reduce bail bouncing.



21 7 Slow Or Hard Keyboards

April 18, 1980

A slow or hard keyboard may be caused by the one-piece keyboard locking interposer being partially engaged in the bail compensator tube. Check the adjustment of the keyboard locking bail and ensure that it positively locks the keyboard with the switch in the off position, yet unlocks the keyboard in the on position and allows the locking interposer to clear the compensator balls.

Note: *The blue tip of the locking interposer spring should be attached to the interposer.*

21 8 Interposer Sliding Off The Filter Shaft

April 18, 1980

During a hand-cycled operation it is possible that the B, W, Y, Q interposers will slide off the filter shaft before the interposers have made the correct selection. This happens because of the minimum loading of the interposer on the filter shaft through the interposer latch link. Providing the interposer-to-filter shaft adjustments are correct, no failure will occur during a power operation.

21 9 Keybuttons — Replacing

April 18, 1980

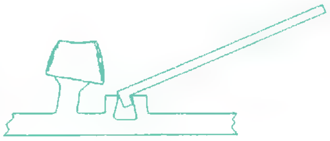
When replacing a keybutton, use the following procedure: disconnect the linecord, turn the switch to the ON position, and handcycle the machine while holding the keylever down until the interposer is out from under the keylever pawl. This will allow the interposer to enter the selector compensator and prevent the keylever pawl and interposer from being bent or broken when pressure is applied to the keybutton. If more than one keybutton is replaced, the machine should be cycled each time to allow the next interposer to enter the compensator.

The end of the 6" (152,4mm) screwdriver can be placed in the forming slot of each keylever to prevent the slot from closing up when placing pressure on the keybutton.

21 10 Hooverometer As Keylever Forming Tool

April 18, 1980

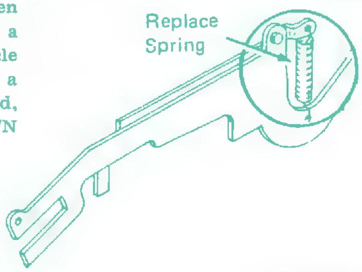
The "L"-shaped part of the Hooverometer can be used as a keylever forming tool to expand the keylever lugs. This procedure is easy and safe to use. Lift up to expand lugs. Use duck bill pliers to close the lugs.



21 11 Cycle Clutch Latch Restoring Spring

April 18, 1980

Some machines may have been shipped to the field with a heavy spring on the cycle clutch latch. If experiencing a "heavy" or "tight" keyboard, replace this spring with P/N 1123827.



21 12 Cycle Clutch Keeper Adjustment

April 18, 1980

Adjust up or down so the clutch release pawl will pass under the keeper by 0,03 - 0,05 mm (.001" - .002") when an interposer is latched down. To check this adjustment, use the following procedure:

1. Latch down an interposer.
2. Hand-cycle the character until that interposer is released from the compensator tube.
3. Latch the same interposer a second time (placing that character into storage).
4. Continue hand-cycling until the cycle clutch latch is point-to-point with its keeper during the restoring part of the first character's cycle.
5. The cycle clutch latch keeper may now be moved up or down and the cycle clutch latch will not move in the latched mode so the 0,03 - 0,05mm (.001" - .002") clearance can be observed and adjusted.

21 13 Keylever Tension Springs — Reinstallation

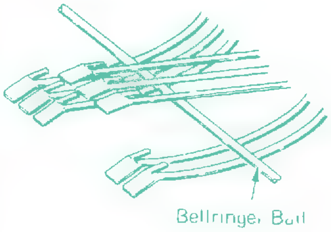
April 18, 1980

The keylever tension springs may be restored to their operating position with the covers on. Insert a spring hook through the opening around the spacebar keybutton and reposition the displaced spring.

21 14 Interposer Restoring Springs — Replacement

April 18, 1980

When replacing an interposer restoring spring, it will help if the keylever pawl leaf springs are put over the top of the bellringer bail while installing the interposer spring.
Move the bellringer bail forward and position the leaf spring over it. Reverse the procedure to position the leaf spring on the keylever pawl. Be sure the leafspring is in the notch of the keylever.



21 15 Keylever Removal Technique

The following is an effective way to remove keylevers:

1. Remove top cover.
2. Remove keybutton.
3. Remove margin rack from right hand side.
4. Loosen bell bail lever.
5. Lift up bellringer bail (do not remove completely).
6. Drop keylever from fulcrum rod and pull keylever out toward the rear of the machine.
7. Reverse this procedure to install new keylever.

This should not be done in cases where loose keybuttons are a problem, i.e., automatic letter writing machine, etc.

21 16 Worn Interposers

April 18, 1980

Some machines have been sent to the field with wrong interposer hardness in the area contacting the filter shaft. For this reason the interposer will wear after short time in use.
If you are experiencing selection problems, flicking, repeating characters etc., check the interposers for wear in the area shown in Figure 1.

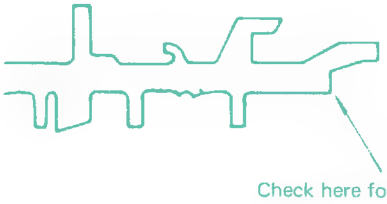


Figure 1

MACHINES AFFECTED:
Netherland Prod.: S/N not known.

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Use Applicable Service Code

For Single Interposer Replacement See CEM No. 21-3.

21 17 Cycle Clutch Bail Damper Spring (21-240) Position Changed

April 18, 1980

PURPOSE: To reduce "Flicking" and to improve "Latch and trip point (APM Frame 19), by preventing flexing of the cycle clutch bail (21-209).

SOLUTION: The damper spring is mounted now near the L.H. Keyboard side plate (See Figure 1).

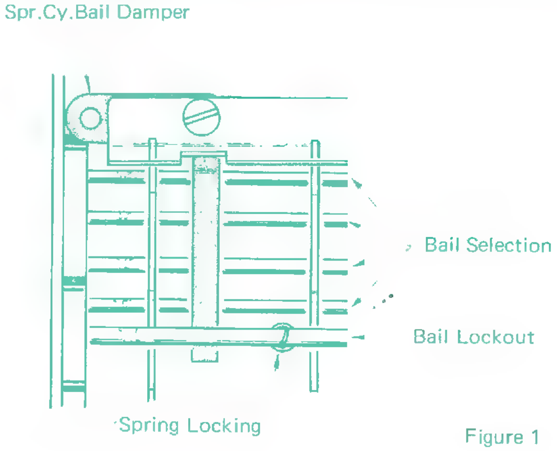


Figure 1

On the 9XX machines the damper spring is mounted at an angle to prevent interference with the locking interposer spring (09-130) (See Figure 2).

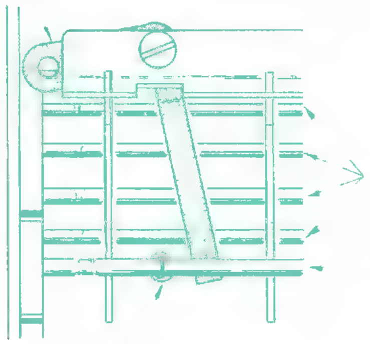


Figure 2

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY	STOCK ECHELON
21	240	8169011	Damper Spring	1	D

MACHINES AFFECTED:

Netherland Prod.: Above S/N 1836000.

23 - SELECTION

23 1 Negative 5 Latch

April 18, 1980

It has been found that some machines have left plant Amsterdam with a negative 5 latch made of too thick material. This will cause the stud 23-208 to come loose or, the latch to bind.

SOLUTION: The latch should either be replaced or grinded to get free rotation on the stud.

ADJUSTMENTS: To facilitate adjustment of negative five stop screw, we have received a suggestion describing following easy method:

1. Make sure Cy-shaft is resting against latch in restposition.
2. Loosen nut 23-217 and turn screw (23-216 in, while holding latch to the front, until latch surface is higher than screw.
3. Turn screw out slowly until negative five latch drops into latched position, and tighten nut.
4. Check adjustment on opposite lobe of the cam, and refine if necessary.

23 2 Differential Bracket Assembly — Loose

April 18, 1980

When differences in band width cannot be corrected through normal adjustment, look for a loose or broken differential assembly mounting stud. A loose nut can result in intermittent malselection and tape breakage.

23 3 7X5 Rotate Tape Can Be Used On 7X1, 7X3

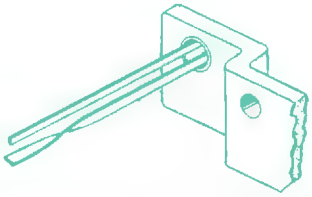
April 18, 1980

The Model 7X5 rotate tape can be used on the Model 7X1 and 7X3 if necessary. When it is used, it requires readjusting the homing, rotate arm motion, rotate arm eccentric stud and shift motion.

23 4 Rotate Tape Installation

April 18, 1980

Rotate tapes should be installed so that when the rocker is in print position, the twist in the tape is at a maximum. The top of the tape should be to the front when coming out of the rocker shaft.



23 5 Negative 5 Latch — Adjustment

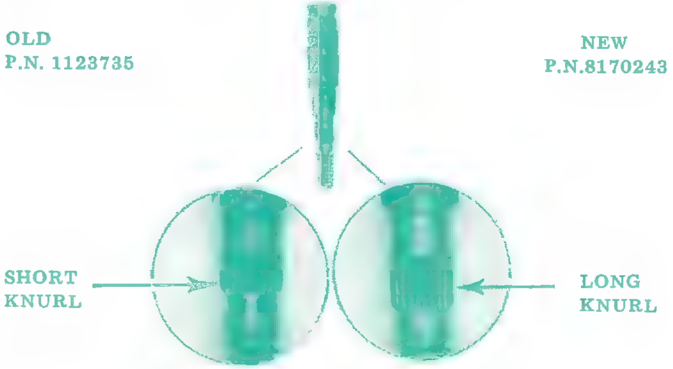
April 18, 1980

If the negative latch clearance is readjusted, be sure to check the overlap of the latch on the head of the stop screw. The head of the stop screw may be out-of-round and turning the screw may change the overlap.

23 6 Rotate Bellcrank Mounting Stud — Redesigned

April 18, 1980

PURPOSE: To improve the quality of the fixing of the rotate bellcrank mounting stud, the length of the ("Knurl") has been increased to have a longer part in the power frame to prevent it from coming loose.



PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	STOCK ECHELON
23	483	8170243	Stud, Rotate Bellcrank	D

MACHINES AFFECTED:

Netherland Prod.: above S/N 1836000.

THE FOLLOWING INFORMATION FOR IBM USE ONLY

PARTS INFORMATION: Scrap all the old parts no. 1123735 when receiving new parts.

F.Q.R. Code Reporting:
Mec. 723 Ref. 483 and applicable failure code.

23 7 Rotate Mechanism — Redesigned

April 18, 1980

PURPOSE: The balance lever has been redesigned to aid adjustments. The balance lever has been changed to a solid lever and the balance adjustment is made by adjusting the -5 latch stop screw (figure 1). The rotate arm remains the same.

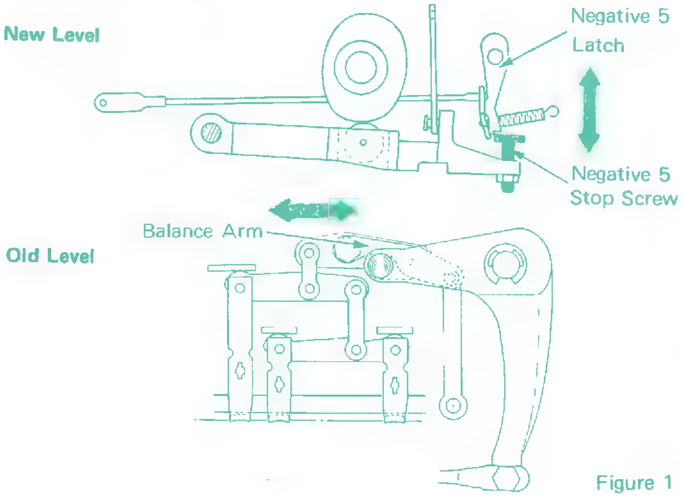


Figure 1

ADJUSTMENTS: Adjustments remain the same and either the APM of the service manual should be used in combination with General CEM No. 28.

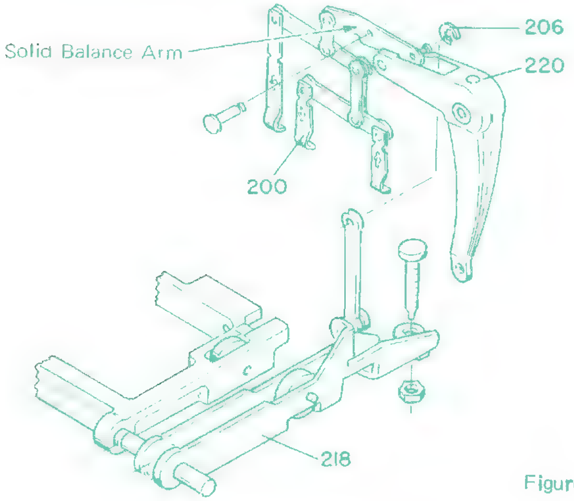


Figure 2

Note: SOLID BALANCE ARM CONVERSION

Former level adjustable balance arm is no longer available. Orders will be substituted to the solid balance arm.

When installing the solid balance arm in the old level rotate bellcrank (23-220), install the two washers as shown (13-82).

The solid balance arm and the one piece rotate arm are compatible.

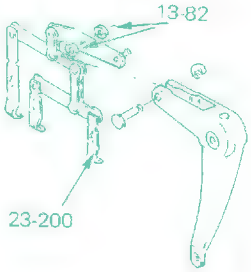


Figure 3

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION
23	200	8169327	Rotate Latches — Solid Balance Arm
	206	1073418	C-Clip
	218	8169328	-5 Latch Bail — Solid Balance Arm 8XX
	218	8169329	-6 Latch Bail — Solid Balance Arm 9XX
	220	1290785	Rotate Bellcrank — Solid Balance Arm
	346	1092125	C-Clip
13	82	1092017	Washer

MACHINES AFFECTED:

Netherland Prod.: Part of production above S/N 1860000.

THE FOLLOWING INFORMATION FOR IBM USE ONLY

PARTS INFORMATION

ORDER: Via COP Orly.

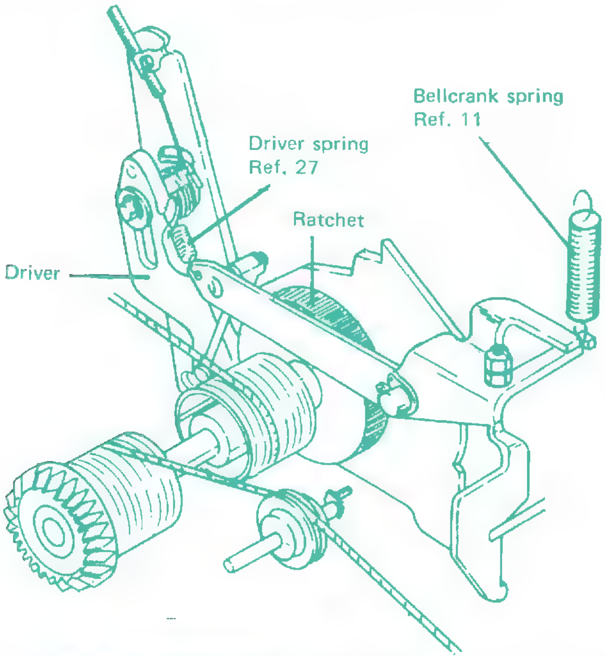
24 - ROTARY BACKSPACE/EXP BACKSPACE

24 1 Rotary Backspace Springs

April 18, 1980

Wrong spring tension of bellcrank spring & driver spring cause driver bounce & ratchet wear.

Make certain to use correct spring if you change parts.



24 2 Rotary Backspace Ratchet Wear — Redesigned Parts

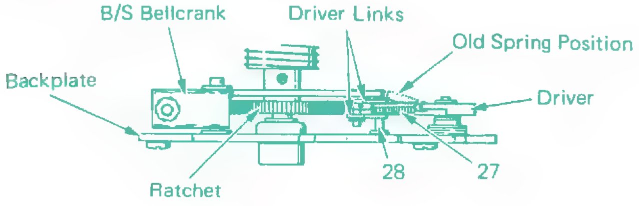
April 18, 1980

PURPOSE: To eliminate excessive wear and chipping of the ratchet teeth (24-6) due to incorrect alignment of the driver (24-32).

SOLUTION: A redesigned stud and spring is available and can be installed on any machine with rotary backspace. The stud replaces stud (24-28) and the spring replaces spring (24-27). The stud is installed through the driver and lower driver link hole and the flat of the stud rides against the backplate (24-1). Attach the small loop end of the spring to the driver and the long end to the driver link mounting stud between the two links (24-29).

Note: *Do Not Install Spring In B/S Bellcrank Hole.*

ADJUSTMENTS: Ensure driver to ratchet clearance is .030"-.040" (F/N 241-5939). Lubricate with thin film of No. 23 grease on the backplate where the stud contacts.

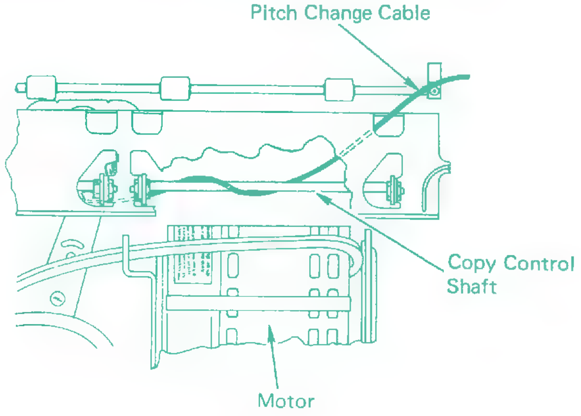


Top View

24 3 Pitch Change Cable Routing

April 18, 1980

It can be possible that double insulation standards are broken by backspace pitch change cable (724-37) to close the motor.
If cable is changed or any end is disconnected use wire tie (711-38) to hold cable to copy control shaft or install it as in figure.



PARTS:

MECH/REF.		PART NO.	DESCRIPTION
711	38	1159519	Wire tie.

25 · OPERATIONAL CONTROL

25 1 Cam Pawl Wear — Space/Backspace

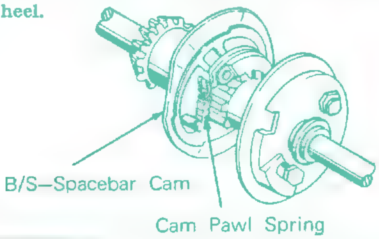
April 18, 1980

Sound Test: Hold the carrier and operate repeat backspace. Worn pawls will slip on the cam ratchet and can be heard immediately.

25 2 SB/BS Cam Spring — Correct Installation

April 18, 1980

If you change broken cam pawl spring install spring with open side of loop to cam to prevent spring break caused by interference between spring loop & cam wheel.



25 3 Operational Cam Follower — Roller Replacement

April 18, 1980

PURPOSE: Some machines have been shipped with cam follower rollers that will wear very quickly.
A replaceable S/B and C/R cam follower roller is available. Removal of the roller and the roller rivets is performed with special tools. The recommended replacement procedure is as follows:

Note: Cam follower removal tool must be lubricated to reduce friction. Failure to lubricate tool will cause handle to bind. If handle continues to bind, add washer (P/N 1117394, contained in US parts packet No.8) between handle and tool body.

1. Remove escapement triplink (06-10).
2. Remove index link (20-403).

Note: Installation of the removal tool may not be easy. This condition can be reduced by one of the following:

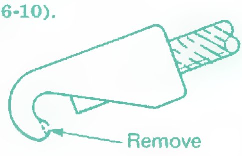


Figure 1

a) A portion of the hook can be removed on a grinder (Figure 1). This should be done in the CE workshops.

b) Tool can be disassembled allowing installation of hook over roller as shown (Figure 2). If this method is used, tighten shaft against the roller before re-assembling tool.

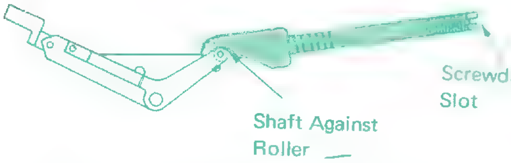


Figure 2

3. With tool installed as shown (Figure 3), make sure shaft is tightened securely against roller to lock roller in place.

IMPORTANT: *If shaft is not tightened against roller, it is possible that the cam follower arm will break, however, tightening shaft too tight against roller makes removal of the roller from the tool* **difficult**, *and can result in breakage of the screwdriver slot. Secure tool against print shaft and tighten handle until roller snaps out of follower arms.*

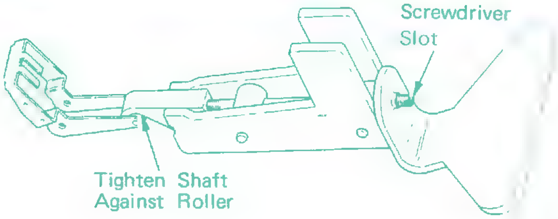


Figure 3

4. If rivet heads remain in arms, install rivet tool on one side of duckbill pliers and punch rivet out. A piece of paper may be placed inside the rivet tool to held tool on duckbills (Fig. 4).

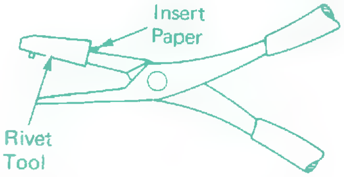


Figure 4

Install replaceable rollers as shown (Figure 6).

Important: *Lubricate all replaceable parts with No. 10 oil before installation.*

5. (C/R) The recommended procedure is as follows: Install sleeve (25-318) inside roller. Apply grease on locking plate (25-315) (Figure 5).

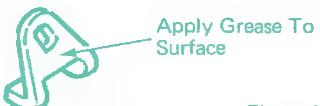


Figure 5

Align flats on sleeve with hole in locking plate and press against roller. While holding roller with scissor clamps, lower complete assembly between follower arms. Left hand arm should be in slot of locking plate. Install one c-clip on pivot shaft (25-319) and install pivot shaft through complete assembly. Install remaining c-clip (Figure 6).

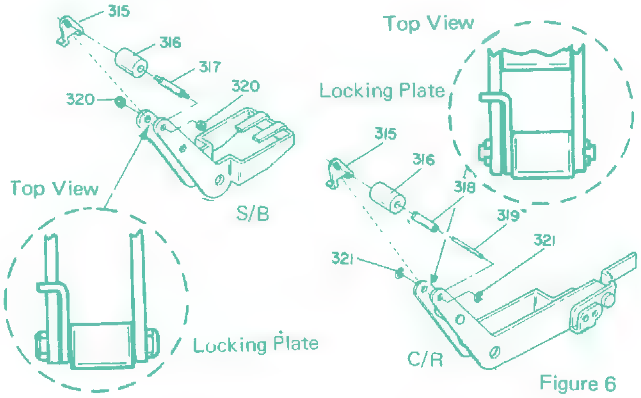


Figure 6

(S/B) Install typebar aligning tool between cam follower arm (Figure 7). Apply grease to locking plate and install over left hand follwer arm and align holes. Install pivot shaft (25-317) through roller. While holding roller in place between follower arms with scissor clamps or tool as shown in Figure 2, align flats on end of shaft with slot in locking plate and remove aligning tool.

Install nuts on shaft (Figure 6).
Caution: *Do not overtighten.*

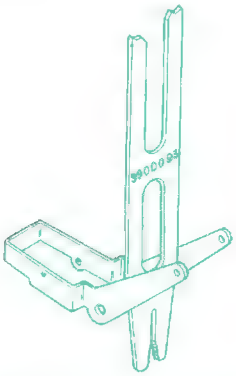


Figure 7

Note: *Locking plate must be installed on all cam followers so that pivot pin does not rotate, and should be installed on the left hand follower arm.*

6. Replace existing tab cord idler pulley (18-123, 19-17) with smaller pulley so that there is no interference between nut (25-320) and pulley.
7. Fit escapement triplink and indexlink.
8. Roller pivots must be lubricated.

1. Check operational interposer restoring bail adjustment (APM FR 133).
2. Check operational latch height adjustments (APM FR 136, 152).
3. (C/R) Check C/R overthrow (APM FR 153).
4. (C/R) Check all index adjustments (APM FR 243-249).
5. Check B/S motion adjustments (APM FR 165 (NRB/S), FR 172 RB/S).
6. Check Escapement trip-link (APM FR 96).

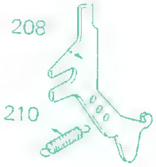
ESTIMATED INSTALLATION TIME: .4 Hrs.

25 4 Operational Interposer Restoring Bail — Redesigned

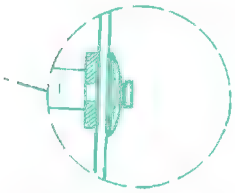
April 18, 1980

PURPOSE: To make adjustment and installation in the field easier.

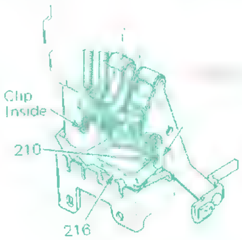
SOLUTION: The new bail (25-216) fits outside the interposer bracket (25-218) using the same mounting holes as the old bail.
The new studs (25-212) are required due to difference in material thickness, and they can now be installed from outside, with the clips (25-217) installed inside the bracket.
The Spring (25-210) on the index interposer must be changed to one with a smaller diameter to avoid interference between the spring and the RH lug on the restore bail. The new spring has the same tension as the old.



Note: *Install clips as shown in diagram. Wrongly installed clips will result in malfunction, caused by lost motion in the restoring bail.*



Clip correctly installed.

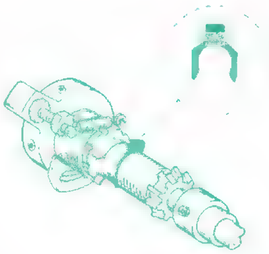


ADJUSTMENTS: Remain the same.

25 5 Torque Limiter And Tab Governor

April 18, 1980

Simplified Adjustments: Position the carrier return pinion for proper gear engagement with the escapement drum. Insert the 0,13mm (.005") cycle shaft shim (P/N 1280822) between the CR pinion and the torque limiter arbor and push the torque limiter arbor up to the shim. Tighten the torque limiter setscrews. The proper adjustment is now made with a minimum of clearance and no binds. This same procedure can be used for adjustment of the tab gorvernor pinion and collar.



25 6 Torque Limiter Lubrication

April 18, 1980

The torque limiter may be lubricated without disassembly by placing grease on the end of the torque limiter spring in the grooves of the arbor. When this is completed, hold the carrier during a return operation. The spring will attract the grease, providing enough lubrication.

25 7 Operational Clutch Wheel — Wearing

April 18, 1980

If experiencing a repeating spacebar and backspace operation, check the adjustment shown in Figure 1. Insufficient bite ot the clutch release arm (25-239) to the clutch wheel (25-44) can cause early wear. A repeating operational cam may look like escapement failures (skipping or crowding of characters). Check the latching surface on the clutch wheel; if the latch is rounded, the operational cam or the clutch wheel should be changed.

Note: *Check adjustment by manually releasing the latch from the bottom of the machine. Do not check this adjustment by releasing the spacebar as the load of the spacebar interposer will cause an incorrect reading.*

Clutch Release Arm Bite

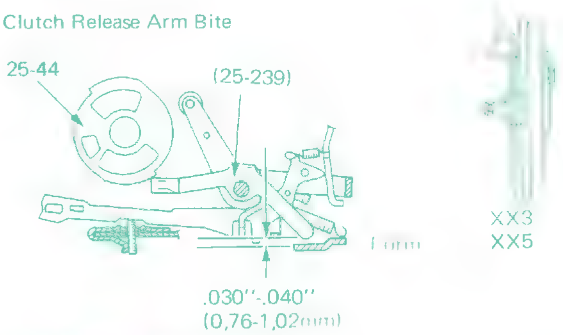


Figure 1

25 8 Torque Limiter Spring Clamp — Redesigned

April 18, 1980

PURPOSE: Prevent spring hook from breaking. Prevent clamp from turning around the screw.

SOLUTION: Install redesigned clamp (Figure 1).

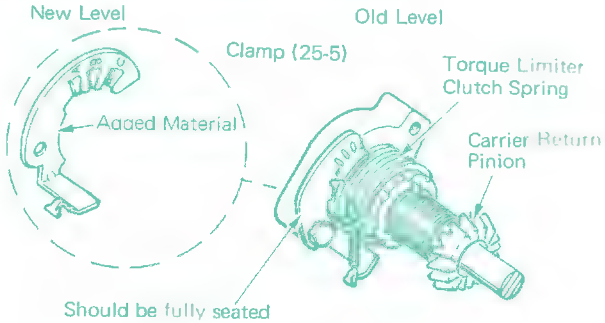


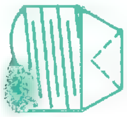
Figure 1

IBM GBG · WT E/ME/A · WT A/FE
OP Customer Engineering
MEMORANDUM 7/8/9X

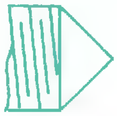
25 ⑨ **New Screw Operational Cam Ratchet** April 18, 1980

PURPOSE: To avoid the screw coming loose.

SOLUTION: A new pointed screw is used for a better fixing of the operational cam ratchet. If experience with operational cam ratchet coming loose, change the original screw 25-36 P/N 1175103 by a pointed screw P/N 316781. On machines below serial number 1.760.000 check for no interference between pointed screw and the escapement follower 06-05 P/N 1174245; if so replace the follower.



OLD LEVEL
1175103



NEW LEVEL
316781

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION
25	36	316781	Screw XX3 & XX5

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Use Applicable Service Code

PARTS INFORMATION:

ORDER: Via COP Orly

26 - CORRECTING

26 1 Service Tips For Correcting Mechanism

April 18, 1980

1. Correcting Mechanism is not field installable.

2. 2 additional holes in Cardholder can be cause of paper folding when paper is put in machine with carrier close to LH or RH side of paper. If customer is complaining about this failure, *countersink* (look at figure 1) from rear side both small holes with a metal drill cardholder will be changed.

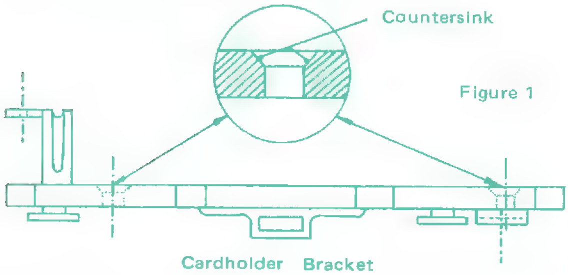


Figure 1

3. Platen cannot be removed with carrier at LH or RH side of machine. Due to bigger ribbon mechanism. Space, or backspace carrier from the side.

4. Correcting torque bar (just behind carrier support) can easy be bent when you remove dustshields. Use hooverometer as a help for screwdriver to prevent bar from bending (look at figure 2).

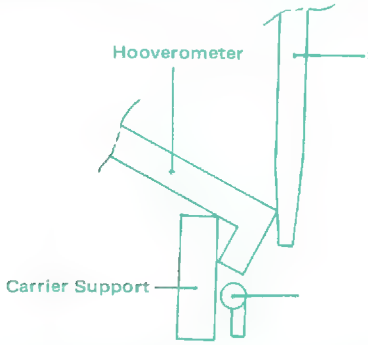


Figure 2

5. To prevent paper pulling off from platen by lift off tape, stronger paper bail springs P/N 8168819 are installed. Center bail roll should have same pressure to platen as outside rolls. Form paper bail if needed.

6. With paper bail to front of machine, take-up pulley can hit bail arm (Mech. 722 Ref. 19) so escapement or tab failures can occur. When you use machine, keep paper bail against platen.

7. It is easy to break stud of latch bellcrank when you make adjustment of make actuating bellcrank.
Use another bender from bottom side of machine as support.

8. Supply ratchet of lift off tape, has 2 notches between teeth. This was done due to production only. Normal 40 teeth ratchet will be released.

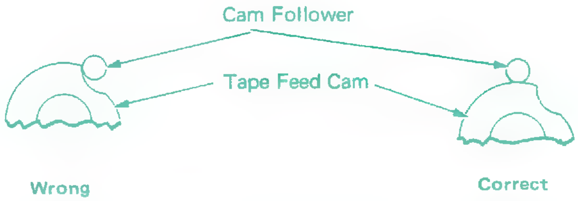
9. If Mech. 726 Ref. 79 & 80 are not lubricated, incorrect take off ribbon motion can occur. Same can be possible if correcting torque bar has to less side play.

10. Tape lift failures can occur if tape lift cam follower does not follow cam surface.
Check left carrier bearing, it should be tight & flush with outside carrier edge, if not, carrier should be changed.

11. Carrier binds in tab or spacebar operations can be caused by tape feed cam follower positioned just off high point of feed cam (look at figure 3). Cam follower position should be adjusted with machine at rest & print shaft play removed backwards.
Binds are caused by pressure on right end of print sleeve key against keyway. Check adjustment of rotate homing & timing (Pictorial Ref./ Adj. Manual Form No. 241-5307 to fix this problem.

Note: *Gear train backlash & cycle clutch overthrow should be correct.*

Figure 3

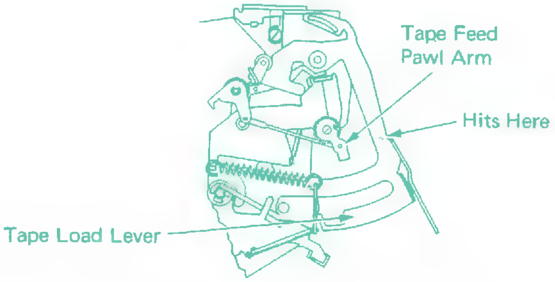


12. If correcting mechanism failures occur check adjustment of tape feed cam follower front lug in Pictorial Ref./Adj. Manual. Make this adjustment with machine at rest & print shaft play removed backwards. If this adjustment is not correct, it can cause bind between feed cam follower (726-45) & feed cam inhibitor (726-53) which prevents correct function.

13. If wrong character has not been removed after correcting mechanism operation, check if tape feed cam inhibitor (726-53) works. Cam follower should not be on tape feed cam when typehead is moved towards platen.

14. Intermittent correcting tape feed failures can be caused if tape load lever (726-15) hits tape feed pawl arm (726-4). Form tape load lever if you have this problem (look at figure 4).

Figure 4



Note: Hole in RH Dustshield Mech. 705 Ref. 55 for correcting link was made too small in several machines. Plant has reworked this shield. Hole is made bigger & has to be 4,75 mm (.187").
If correcting failures occur in field, check this hole for correct size.
Remove material if needed.

Note: A special tool P/N 8168877 is released & has to be used to open machines with corrective mechanism, due to changed C.R. quicker unlatching mechanism. This change was included in 83X S.P. machines after Dec. 1972.
This tool can be used in all machines.

26 2 Correctable Film Ribbon – Folding & Turning About Spike Driver

April 18, 1980

Folding condition occurs as ribbon enters take up side of cartridge when ribbon is installed or re-installed. If ribbon starts to fold it will not tape-up correctly.

To reduce this condition:

1. Cartridge should be checked before installing to see that ribbon leader is centered on ribbon & on supply *core*. If not, it will cause binds in cartridge.
2. Check shock arm wire (715-83) does not contact supply spool teeth when ribbon is in load position.
3. Adjust left cartridge retainer clip as far left as possible.
4. Form front cartridge support lug for clearance of 0,25 - 0,38 mm (.010"-.015") between cartridge & lug (Figure 1).
5. Check that take up *core* interlock prevents cartridge from being turned in wrong direction when in load position.

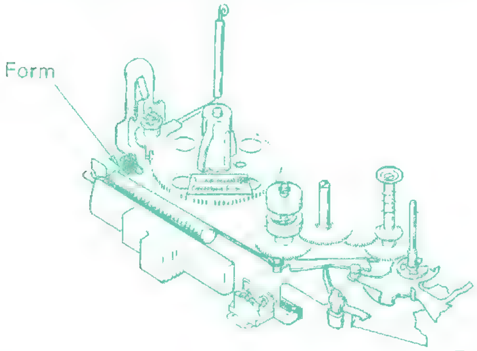


Figure 1

To prevent this problem, *operators* should be told to turn ribbon only until leader is even with right edge of cardholder.
When re-installing ribbon, it should be turned only until loose ribbon is taken up. If more movement is needed, it should be done by typing.

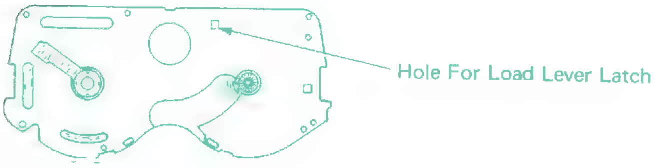
Note: *Any looseness in ribbon should be removed before installing cartridge.*

April 18, 1980

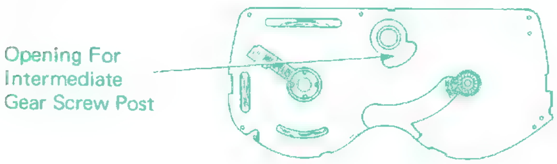
26 3 Correctable Film Ribbon Limiting Device

Customers who want to prevent use of correctable film ribbon & limit their machines to IBM T.III & cartridge film can have limiting device (726-201) installed. Bottom plate of correctable film ribbon (Fig.1) & IBM T.III (Fig. 2) ribbon cartridge have been changed to fit redesigned parts of limiting device.

Note: *Customer must have new level ribbon cartridges. P.S.R. must be used to order complete device for field installation.*



Correctable Film Figure 1



Cartridge Film & IBM Tech. III Figure 2

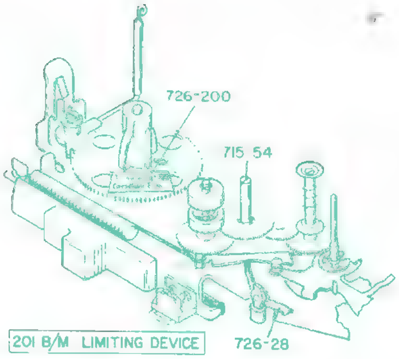
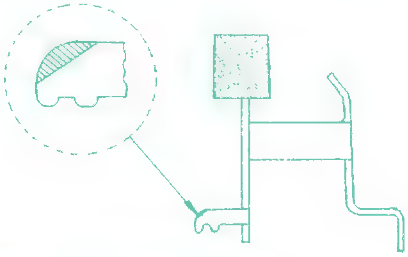


Figure 3

April 18, 1980

26 4 Interference Between Spacebar & Correcting Keylever

Correcting Mechanism can be released by spacebar repeating action.
If print character is missing after spacebar, check interference between spacebar & correcting keylever.
Rework correcting keylever (see figure) if needed.



Note: *Material is soft enough to* file.

April 18, 1980

26 5 Correction Tape — Not Enough Lift Motion

If all adjustments are correct; but stil not able to get enough tape lift motion for proper correction.

Remove left-hand wiper retainer (702-48) and wiper (702-50); check left-hand carrier bearing. Bearing should be flush with carrier *casting*. If bearing extends out of the *casting*, it is possible for the lift cam follower to slip off the lift cam. Use following procedure to correct this condition:

1. Move carrier to the center of the machine.
2. Remove print shaft gear (702-40) and retainer (702-51). Slide the print shaft to the right until it clears the left side of power frame, then remove wiper and retainer; reinstall print shaft gear and tighten both screws (702-41).
3. Loosen ribbon lift cam screw (726-112) and Print Cam Screw (702-203).
4. Use print shaft gear to drive bearing into carrier casting by sliding print shaft to the right. Repeat this until the bearing is driven flush with left side of carrier casting.

Caution: *Do not apply too much force so as to drive the bearing too far (Figure 1).*

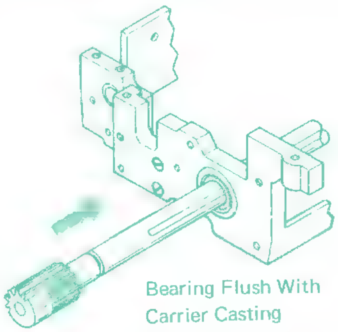


Figure 1

5. Replace all parts and make necessary adjustments.

26 6 Correcting Tape Take Up Spool Interfering With Paper Feed

April 18, 1980

SOLUTION: If experiencing problems with the correcting tape take up spool interfering with the top edge of cards or forms, the new level lug (Figure 1) can be formed to the right. This keeps the paper from hitting the upper flange of the take up spool. Also, it may be necessary to readjust the lug front-to-rear for clearance to the platen according to frame 307 (APM 241-5939).

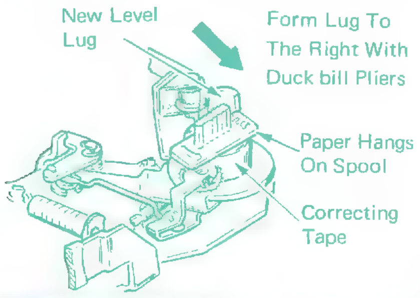


Figure 1

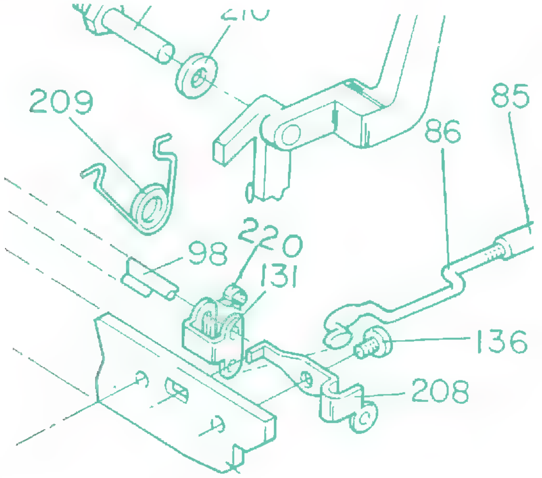
26 7 Carrier Support & Correcting Torquebar — New Assembly Methods

April 18, 1980

PURPOSE: To eliminate interference between bellcrank-torquebar (26-131) and R.H. bracket torquebar (26-208).

SYMPTOM: Some correcting failures caused by interference.

SOLUTION: The assembly method is changed as follows. The torquebar bellcrank (26-131) is mounted on the floating torquebar (26-98) outside the bracket (26-208). An additional clip (26-220) is mounted on the floating torquebar (26-98) to prevent it to move out of its bracket.



ADJUSTMENTS:
Correcting torquebar endplay 0,25-0,64 mm (.010"-.025") instead of 0,25-1,27 mm (.010"-.50").

PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY
26	220	1141223	Clip	1

MACHINES AFFECTED:
Netherland Prod.: above approx. S/N 1.747.870

26 8 Coating On Card Holder Changed

April 18, 1980

PURPOSE: To avoid lift off tape from sticking to card holder.

SOLUTION: If experiencing lift off tape sticking to card holder, change the card holder. The new card holder has an improved teflon coating which will reduce the sticking.

Note: *Scrap your personal stock and reorder.*

Caution: *Coated card holder should not be cleaned with IBM Cleaning Fluid.*

MACHINES AFFECTED:
Netherland Prod.: above S/N 1.870.000 have new card holder installed.

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Use Applicable Service Code

PARTS INFORMATION: Adjustments and part numbers remain the same.

ORDER: Via COP Only.

26 9 Coloured Correctable Film Ribbon — Leader Changed

April 18, 1980

The three coloured correctable film ribbons (blue, brown and green) now have a "cross-hatched" leader (Figure 1). This new style leader identifies the three coloured correctable ribbons from the black correctable ribbon.

The "trailer" end will remain organge colour for all correctable ribbons.

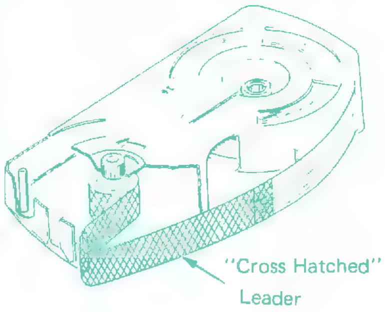


Figure 1

26 10 Correction Tape — Intermittent Feed Failures

April 18, 1980

SYMPTOM: Intermittent correction tape feed failures and/or incomplete lift off may be caused by a defective pawl feed mounting screw (26-5). The screw is undersize in the area where the washer (26-7) is mounted (Figure 1). This allows the washer to be off center and partially cover the teeth on the spiked take-up ratchet (Figure 2).

SOLUTION: When experiencing this problem, replace the screw (26-5).

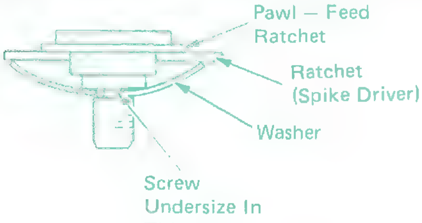


Figure 1

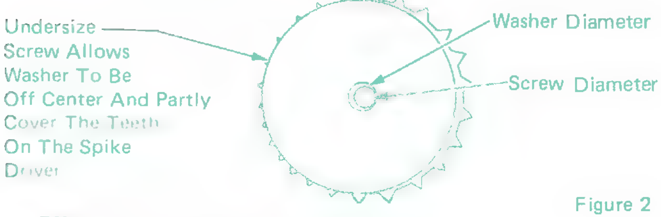


Figure 2

Note: *Effects Mag Media Selective Ribbon as well.*

PARTS REQUIRED:

MECH/REF.	PART NO.	DESCRIPTION	QTY	STOCK ECHELON
26 5	1290653	Screw	1	D

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Service Code: 30/31

PARTS INFORMATION:

ORDER: Via COP Orly

30 - SOUND REDUCTION PACKAGE

30 ① Accoustical Hood Seal – Redesigned

April 18, 1980

PURPOSE: For a longer lifetime and greater reliability of the seal.

SOLUTION: The new seal is a friction fit part that clips on the hood. Install as shown in Figure 1.
Plant installed hoods will have the seal glued on for shipping purposes.
In the field it is not needed to glue the seal, but if it becomes necessary Eastman 910 or similar type adhesive may be used.

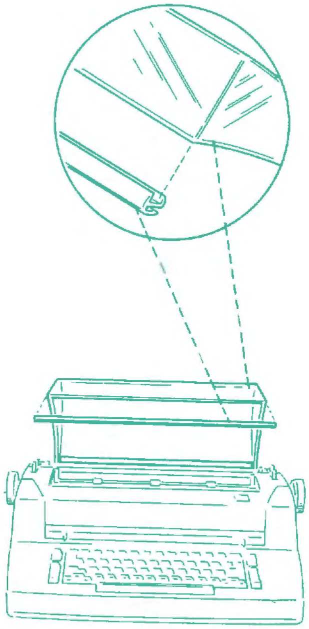


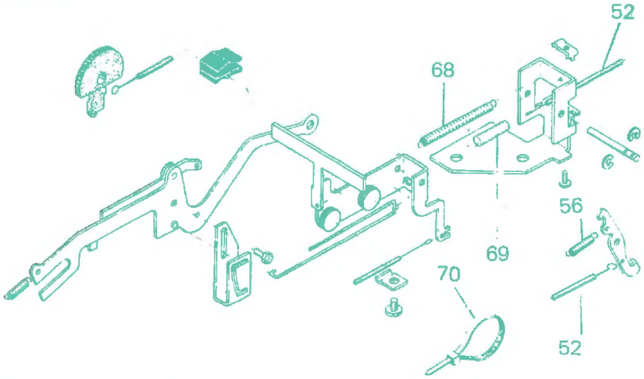
Figure 1

40 - DUAL LANGUAGE - DKD

40 ① April 18, 1980

Changes In The Dead Key Mechanism Model 8X5 For Thailand

PURPOSE: Several changes have been made in the dead key mechanism for Thailand machines. The Dead Key Cable Clip P/N 8168268 is changed by use of a cable tie P/N 1159913 (740-70) and a compression spring has been added to improve the Dead Key Cable restoring 8170561 (740-69). The P/N of Code 740 Ref. 52, 56 and 68 are also changed.



PARTS REQUIRED:

MECH/REF.		PART NO.	DESCRIPTION	QTY
740	52	8170565	Cable, Esc. Trigger	1
	56	1123827	Spring, Esc. Trigger	1
	68	1117589	Spring, Hairpin	1
	69	8170561	Spring, DK Cable	1
	70	1159913	Cable Tie	1

MACHINES AFFECTED:
Netherland Prod.

THE FOLLOWING INFORMATION FOR IBM USE ONLY

Service Code: 30/31

PARTS INFORMATION:

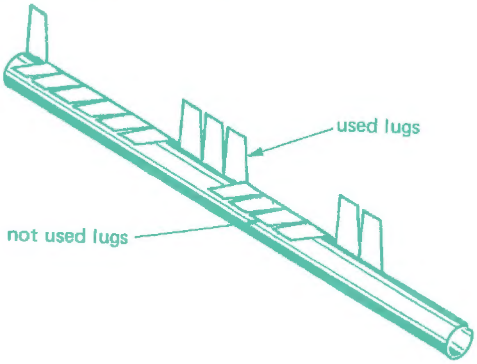
ORDER: Via COP Only.

41 - SHIFT SENSITIVE

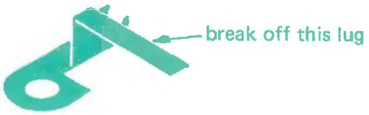
41 1 April 18, 1980

Velocity Vanes – New

New velocity vane with 86 lugs available for 7XX & 8XX machines. Not used lugs are bent off. If other positions have to be changed to low velocity, form needed lug vertical.



Note: *Old level & new level vanes are compatible. If you install new vane in earlier machines, break off horizontal lug of center bracket.*



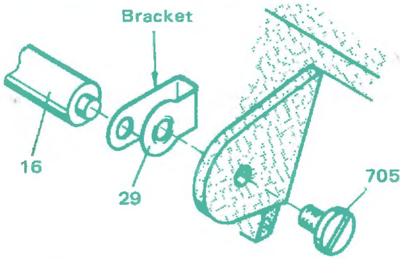
49 - PIN FEED PLATEN

49 1 Pin Feed Platen — Reliable Paper Feed

April 18, 1980

If you install pin feed platen asm. on 7xx & 8xx machines, it is important to install thick paper bail rolls (mech. 749 ref. 28) too. This makes indexing & paper feed function reliable.

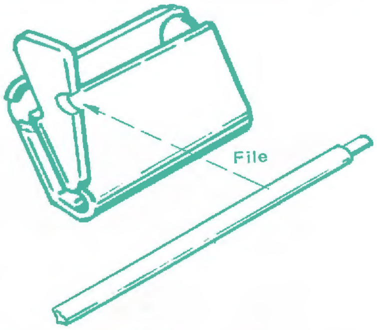
To install rod (Ref. 16) in 8xx machines, 2 brackets (on LH & RH side) are needed.
Use mounting screws (705-10) from paper table to install brackets.



49 2 Paper Gauge — Pin Feed Platen Machines

April 18, 1980

If customer needs to have paper gauge fitted to pin feed platen machines use fix in figure.



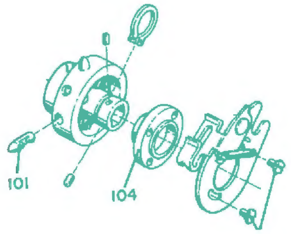
49 3 Pin Feed Platen Pinwheel — Changed

April 18, 1980

Pinwheel cam & pins are made now of plastic to prevent pinwheels from bind. Part numbers for cams & pins are not changed.

Use plastic pins & cams together. Do not use together plastic & metal pins or cams.

Metal cams & pins are no longer available. Plastic cams need longer screws (Ref. 108) to install paper guide. These screws are compatible with metal cams.

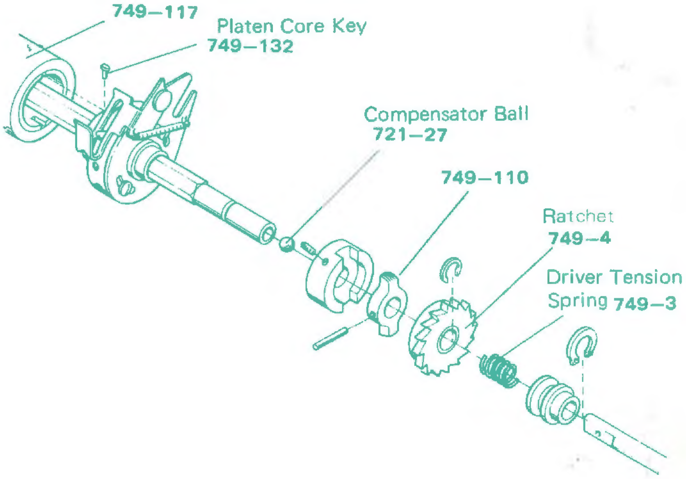


49 4 Index Failure — Pin Feed Platen

April 18, 1980

Following three areas should be checked in addition to normal adjustment (look at CEM 228) when index failures occurs.

1. Not enough driver spring tension (749—3). Check tension with a spring scale against left platen knob. It should be 675 to 1125 grams (1,5 to 2,5 lbs.) just before driver (749-110) resets into ratchet. Tension can be increased by installing a compensator ball (721-27) P/N 1124682, as shown.
2. Some 27 teeth ratchets (749-4), may have misaligned teeth. It is recommended to change ratchet if index failure occurs.
3. Check platen core key (749-132) for wear and replace key and core if worn. Metal pinwheels have a replaceable key (749-132) P/N 1187957. Black plastic pinwheels have a molded key. Therefore replacement of pinwheel is necessary.



IBM GBG - WT E/ME/A - WT A/FE
OP Customer Engineering

MEMORANDUM

7/8/9X

GENERAL

G 1 Tip To Release Jammed Carrier At L.H. Side Of Typewriter

April 18, 1980

Jammed carrier possible to occur at installation of 7XX, 8XX, if carrier is locked for *transport* at L.H. side of typewriter, or other causes (Machine is in cycle. Motor locked).
To release carrier do not release L.H. top cover latch lever, to prevent broken ribbon feed plate. Release only R.H. top cover latch lever & lift top cover about 10mm (.37"). Put hand cycling tool in operational shaft. Release carrier by turn hand cycling tool.

G 2 Replacement Links - All Products

April 18, 1980

Link has extended threaded part & is available in two lengths, to replace many links with fixed length between 25-125 mm (1-5 inch).

Link can be broken to proper length by screwing two clevis on the link as shown in figure.

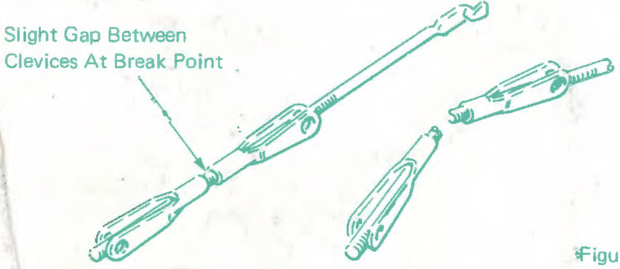


*Figure 1

end link by using pliers on both clevises until it breaks, do not use side itter. When clevis is removed, the threads are "cleaned". By using only readed part to replace two clevis links, locknut must be used to event link from turning.

ARTS:

N 1231565	Link 3"
P/N 1231566	Link 5"

TOCK INFORMATION:
R: Via COP Orly.

3 *Copper Coloured Screw

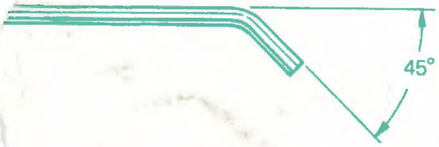
April 18, 1980

f screws and/or nuts to indicate a left-hand thread is

nt Feed Roll Adjusting Screws And e Clutch Collar Accessibility

April 18, 1980

two adjusting screws, form the no. 10 6-flute 103) as shown in the drawing. The wrench can



G 5 Small Locknuts Onto Adjustable Bristol Screws

April 18, 1980

When replacing locknuts on bristol adjusting screws, first insert the bristol into the head of the adjusting screw. Slide the locknut over the top of the bristol wrench and down onto the bristol screw. The locknut may then be turned onto the bristol screw without the danger of losing it.

G 6 Method For Use In Workshops — To Test Intermittent Problems In The Machines In An Automatic Mode Without Using A Robot Tester

April 18, 1980

When it is necessary to test the machines in an automatic mode to help to diagnose intermittent failures (e.g. escapement, ribbon feed, etc.) the following procedure can be used.

1) To activate 2 desired characters, use a pair of latch restoring springs (Mech.723, ref. 204, P/N 1147647) which will be hooked from the rear part of the interposers to one convenient anchoring point in the power frame, to pull the interposers down (Figure 1).
Note: *It will be necessary to adjust the spring tension until you will get the correct typing. Then the two characters will print alternatively.*

2) To actuate the carrier return automatically, just fit a Typebar shift toggle spring (Mech. 216, ref. 3, P/N 1078049) over the carrier return keylever, and position it until the bellringer bail pushes its upright tug, this motion is transfered to the C.R. keylever, then set the right margin stop in the desired position. Every time the carrier reaches the right margin, the C/R will be operated automatically (see Figure 2).
Note: *Ensure that the C.R. Interlock is correctly adjusted to prevent typing during carrier return.*

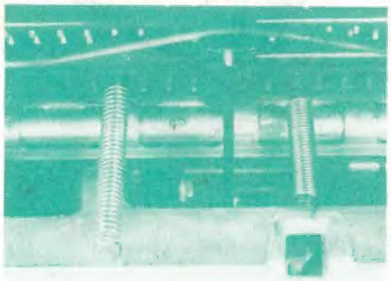


Figure 1

Method Suggested By Mr. H.C. Coetezee, Johannesburg, South Africa.